ADDRESSING DEPRESSION IN WESTERN CAROLINA UNIVERSITY STUDENTS: THE ROLE OF EXERCISE

A disquisition presented to the faculty of the Graduate School of Western Carolina University in partial fulfillment of the requirements for the degree of Doctor of Education

By

Shauna M. Sleight

Disquisition Chair: Dr. Kofi Lomotey
Bardo Distinguished Professor
Department of Human Services

Committee Members:
Dr. Robert Crow, Department of Human Services
Kellie Angelo Monteith, Division of Student Affairs
Dr. Phyllis Robertson, Department of Human Services

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ABSTRACT

ADDRESSING DEPRESSION IN WESTERN CAROLINA UNIVERSITY STUDENTS: THE ROLE OF EXERCISE

Shauna M. Sleight

Western Carolina University (May 2016)

Chair: Dr. Kofi Lomotey

Western Carolina University (WCU) experienced an increase in the number of students with depressive symptoms over the past few years, an upsurge that is congruent with national trends. In an effort to combat the pressure put on Counseling and Psychological Services (CAPS) and to provide a more comprehensive approach to student mental health, Campus Recreation and Wellness partnered with CAPS at WCU to develop an improvement effort. The purpose of the improvement effort was to implement an exercise intervention for traditionally-aged undergraduate students with mild to moderate depression to reduce stress levels, ultimately resulting in a reduction in depressive symptoms. In this improvement effort I sought to address three questions: 1) What are the barriers that prevent WCU students with depression from pursuing a regular exercise program? 2) Does an exercise intervention decrease the prevalence of depressive symptoms in WCU students with depression? 3) Does an exercise intervention assist in the development of regular exercise habits for WCU students with depression? Eight participants, age 18-25, with a clinical diagnosis of mild to moderate depression completed participation in the intervention. Overall, the results of the data analysis support exercise as an intervention for depression and assessment of the program

supports the continuation of such a program with recommendations for expansion at WCU.

CHAPTER ONE: INTRODUCTION

I first fully realized the benefits of exercise in my personal life when I graduated from college in 2003. It was the first time in my life competitive sports were not a part of my daily routine. I no longer had a practice to attend to keep me active or a need to train for the upcoming season. During the couple of months following my college graduation, I struggled to maintain a consistent workout routine. I was working minimally and waiting for graduate school to begin, but I did not seem to have the personal motivation to care for my overall health. As I reflect back, I think about how that time was a pivotal point in my mindset regarding exercise. It was the first time in my life that my only motivation to maintain an exercise routine was for my lifelong pursuit of health and well-being. Fortunately, I obtained a graduate assistantship that provided me the opportunity to teach health, wellness, and sports to both college students and individuals with disabilities. Teaching allowed me to personally transition gradually. Now exercise is a regular part of my life, but the largest benefit I have personally experienced is how exercise reduces my stress level.

Over the past 11 years as a campus recreation professional serving in various roles, I have realized that everyone does not experience a personal journey to recognize the benefits of exercise as I did. Each year I find myself wondering how to get more students involved in regular exercise. How can I help students experience the same benefits of exercise that I experience in my life? What is preventing students from participating? Who can I partner with who can reach out to a different population of students? Over the past few years, I have had intentional conversations with colleagues about potential partnership areas. It was through a conversation with our Counseling and

Psychological Services Director that my interest in supporting students' mental well-being evolved and I began reading about the growing mental health concerns on college campuses. Reading and researching allowed me to better understand the breadth of the problem and I became particularly interested in helping students with clinical depression. Next, I explain the significance of the problem.

Significance of the Problem

The mental health of college students continues to be a growing topic as safety concerns on college campuses continue to rise. In a research brief on the top focus areas for student affairs professionals in the next five years, The Advisory Board Company (2012) identified health and wellness education and programming as important to combat the increasing number of students who enter college with diagnosed mental health conditions. The American College Health Association (ACHA) publishes national reference group data gleaned from the National College Health Assessment (NCHA). In Fall 2013, the ACHA reference group consisted of 57 US postsecondary institutions with a total overall response of 32,964 surveys returned, equaling a 20% response rate. According to the NCHA data (American College Health Association, 2014), 84.4% of students stated that at some point during the last 12 months they felt overwhelmed by everything they had to get done. The same survey revealed 44.7% of students felt things were hopeless at some time within in the past year (American College Health Association, 2014). Although these statistics are alarming, there is no indication whether the students reporting feeling overwhelmed or hopeless are actually diagnosed with a psychiatric disorder making them simply students of concern.

Students diagnosed with psychiatric disorders, which can include a number of behavioral or psychological problems, have a lower persistence to degree completion when compared to their peers without psychiatric disorders (Koch, Mamiseishvili & Higgins, 2014). One of the most common psychiatric disorders is depression. In 2005-2006 in the United States, 4.7% of all 18-39 years olds had depression (Centers for Disease Control and Prevention, 2005-2006). In Fall 2013, 11.1% of college students stated they had been diagnosed and treated for depression in the last 12 months and those are only the ones who have sought help and could receive a diagnosis (American College Health Association, 2014). Over 30% of college students indicated that at some point in the last 12 months they felt so depressed it was challenging to function (American College Health Association, 2014). The disparity in these two numbers begs the question as to whether students are actually seeking and receiving the help they need from colleges.

Additionally, there are varying levels of depression, with the most severe being tied to life-threatening behaviors (e.g., suicidal tendencies or the desire to cause harm to others). In the United States suicide is the third leading cause of death for 15-24 year olds (Centers for Disease Control and Prevention, 2010), which is the age range of traditional undergraduate college students. According to the Fall 2013 ACHA data, 7.5% of college students seriously considered suicide in the last 12 months and 1.4% actually attempted suicide in the last 12 months. Depression is linked to suicide through an individual performing risky delinquent acts (Bauer, Chesin & Jeglic, 2014). The National Center for Chronic Disease Prevention and Health Promotion (Centers for Disease Control and Prevention, 2011) notes six types of health risk behaviors that

contribute to the leading causes of death including tobacco use, unhealthy eating, inadequate physical activity, alcohol and other drug use, risky sexual behaviors, and behaviors that contribute to unintentional injury or violence. These may all be behaviors that contribute to depression or suicidal behavior.

In September 2015, the *Chronicle of Higher Education* presented a special report titled *Today's Anguished Students*, detailing the choices colleges are facing in response to the growing mental health care needs of students. The report denotes 31% of counseling centers on college campuses have waiting lists and 33% of college campuses do not have psychiatrists available to help treat students (Wilson, 2015). In addition, the report highlights that 89% of colleges have seen a rise in clinical depression. Although the report does outline strategies colleges are using to help students, such as increasing the number of available counseling sessions per student, providing evening hotlines, connecting students with long-term care in the community and implementing threat-assessment teams, the report also details specific fears and barriers students face when seeking treatment (Wilson, 2015).

In addition to the mounting mental health concerns, colleges are also facing challenges getting some students to take responsibility for their physical well-being. According to the Fall 2013 ACHA data, less than half of college students are partaking in the recommended amount of cardio or aerobic exercise. Health benefits of regular exercise include, but are not limited to, improved sleep, improved mood, stress relief, reduced tiredness that can improve mental alertness, and increased energy (Sharma, Madaan, and Petty, 2006). This brings purpose to my research intervention and questions, which I pose in the next section.

Purpose and Research Questions

Since the health benefits of regular exercise relate to mental well-being, connecting the two for an intervention may provide two-fold benefits: improve the well-being of students with depression and assist colleges in responding to the rise in clinical depression. Exploring how exercise may impact students with depression will allow administrators to make educated decisions about how to proceed in promoting proactive approaches to individual healthcare situations.

The purpose of this improvement effort is to implement an exercise intervention for traditionally-aged college students with mild to moderate depression to reduce stress levels, ultimately resulting in a reduction of depressive symptoms. The charter for change (see Appendix A) outlines the proposed intervention and improvement objectives. This improvement study sought to address three questions:

1. What are the barriers that prevent WCU students with depression from pursuing a regular exercise program?
2. Does an exercise intervention decrease the prevalence of depressive symptoms in WCU students with depression?
3. Does an exercise intervention assist in the development of regular exercise habits for WCU students with depression?

Definitions of Key Terms

Key terms used in this improvement effort have the following specific meanings:

1. *Counseling.* Counseling refers to a professional relationship that empowers a variety of people, both individuals and groups, to achieve goals related to

mental well-being, wellness, and more (American Counseling Association, 2010).

2. *Counselors.* Counselors are the professionals who provide mental health counseling.
3. *Depression.* Depression for the purpose of this study refers to a mood disorder characterized by some or all of the following symptoms for a period of at least two weeks: depressed or sad mood, loss of interest in normally pleasurable activities, change in sleep, weight gain or loss, difficulty concentrating, change in psychomotor activity, feelings of guilt, loss of energy and thoughts of death or suicide (American Psychiatric Association, 2015).
4. *Exercise.* Exercise is defined as planned, structured, and repetitive physical activity with the main goal of improving or maintaining physical fitness levels (Casperson, Powell, and Christenson, 1985).
5. *Mental Health*. Mental health is defined as a positive state of well-being in which an individual can function well on their own, can work productively, can cope, and can positively contribute to society (U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2013).
6. *Mental Illness.* Mental illness is defined as mental health conditions that are associated with negative mental states, including changes in mood and/or behavior, which cause impaired functioning and/or anguish (U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2013).

7. *Participants.* An individual who has a desire to and consents to take part in the prescribed study intervention.
8. *Students.* Students refer to individuals enrolled at Western Carolina University during Fall 2015 that fall into the range of traditional undergraduate ages of 18 to 24.

Delimitations and Assumptions

This intervention was constrained by the following delimitations:

1. The sample was limited to undergraduate students at Western Carolina University, a four-year public university in the state of North Carolina, who were enrolled for the Fall 2015 semester and were of traditional undergraduate ages 18 to 24.
2. The sample was limited to students who visited Counseling and Psychological Services at Western Carolina University during Fall 2015, answered "yes" to the question "Are you interested in learning more about how exercise may benefit you?", and were clinically diagnosed by a counselor as having mild to moderate depression.
3. The study was limited to concentrating specifically on providing enough one-on-one guidance to students so they could continue with a self-prescribed exercise regimen. The limitation of one-on-one guidance with a personal trainer included three structured sessions with a personal trainer, with one session being a fitness assessment.

Assumptions of the intervention included the following:

1. Each of the counselors involved in the referral process defined mild to moderate depression in the same manner.
2. Students who engaged with Counseling and Psychological Services were being honest and forthright about their feelings and symptoms so counselors could accurately provide a clinical diagnosis.
3. Personal trainers, after receiving departmental level training, provided adequate support, motivation, and proper exercise interventions for the students participating in the study.
4. Students provided truthful information to the principal investigator during the initial consultation and post-consultation, as well as on the non-clinical depression screening tool.

CHAPTER TWO: REVIEW OF LITERATURE

I begin this literature review by providing research on factors that contribute to depression on college campuses including some evidence from national cases. I then briefly talk about challenges colleges and universities face with regard to mental health issues, including federal regulations and retention of students with mental health concerns. Next, I discuss relevant research specific to college counseling centers.

Following my synthesis of available research specific to mental health concerns on college campuses, I turn my attention to a comprehensive mental health approach for colleges, which includes research related to integrated care. I then specifically address the research on exercise as it relates to mental health and research on exercise as it relates to depression. After reviewing the current studies, I discuss the limitations of the current research.

Finally, I shift my focus to the relevant literature and data available on the specific population of students who are my focus, WCU students. I discuss historical and current initiatives to address the problem at WCU. I then discuss the limitations and gaps in these initiatives. From the relevant research and the limitations of both current literature and WCU initiatives, I build a conceptual framework to help ground my intervention at WCU.

Depression

There are several factors that contribute to depression in college students. Henriques (2014) proposed considerations specific to college and university life including pressure to succeed academically, transitional challenges associated with going to college for the first time, greater diversity of the student body due to a larger

percentage of the population attending college, a greater number of females attending college, and poor handling of mental health issues by college administrators. Tartakovsky (2008) in a report in *Psych Central* described all the *firsts* experienced by college students and the fact that some students have difficulty managing these firsts. Tartakovsky (2008) and Henriques' (2014) both found that an extensive amount of academic stress can lead to feelings of inadequacy.

Lester (2014) focused on measuring stress levels in a sample of 165 college students, via an in-classroom questionnaire. Results indicated that both college stress and general life stress were significant predictors of depression (Lester, 2014). In a phenomenological study, which consisted of online interviews of 13 college students diagnosed with depression, students noted four major sources of stress: roommate issues, academic concerns, financial and future career planning, and pressure from family members to either have a high level of academic achievement or to help relieve some of the financial burden associated with attending college (Aselton, 2012).

Although family members may put pressure on students, family can also be a mechanism of support. Li, Albert, and Dwelle (2014) investigated the relationship between support from both parents and peers to predicted self-esteem and depression in college students. The study focused on 197 undergraduate students from a midwestern United States, urban, private institution. The research, which utilized the Inventory of Peer and Parent Attachment, indicated that both parental support and peer support as reported by the student were significantly inversely correlated with depression and significantly positively correlated with self-esteem (Li, Albert, and Dwelle, 2014).

College also influences one's identity sometimes leading students to have a lack of identity, which may lead to depression or anxiety (Tartakovsky, 2008). Developed by Zubin (1987), the stress-vulnerability model states that a person is considered well and will remain in a good state absent stressors associated with living. When stressors, such as a lack of identity or academic stress, are present, they can cause both long and short episodes of sickness or depression (Zubin, 1987). Since individuals all cope differently, it is necessary to identify a strategy that counteracts stress on a larger scale to help prevent periods of sickness or depression.

With an increasing number of students facing depression, it is important to find treatment options that allow students to succeed in college and beyond. College students who are battling depression have a more difficult time than their peers, mainly because they do not receive the help needed to improve their condition (Ta & Moustafa, 2014). Many students do not feel comfortable speaking out about their depression; instead of treating the condition, they face social and intellectual challenges (Ta & Moustafa, 2014). Recently, the media has brought to light individual case studies of student struggles. On March 3rd, 2014, Iowawatch published an article highlighting the experiences of two college students in Iowa who battle depression. The article specifically mentioned (1) the students' embarrassment as a barrier to seeking treatment and (2) that the symptoms are often misread by others as poor social and academic performance (Moustafa & Ta, 2014). On October 7, 2014, the *Huffington Post* posted an article focused on a Yale University student who felt she was involuntarily removed from campus after university officials concluded that she was a threat to the campus community following an on-campus psychiatric visit (Kingkade, 2014). A Massachusetts Institute of Technology student

mentioned a fear of being the next disappearing student (Kingkade, 2014). The *Chronicle of Higher Education* also published an article including several case studies of college students' mental health struggles (Wilson, 2015). One story recalled a student's account of her experience at Tulane University. After the student told her professors she was bipolar, taking a semester of medical leave and ultimately attempting suicide shortly before graduation, she decided to create a document entitled "Dear President Fitts" so students at Tulane could voice their experiences regarding mental health care on campus. The document totaled 56 pages and addressed topics such as the need for more access to general counseling, the need for long-term care outside what the university could provide and specific issues with the counseling staff (Wilson, 2015). These case studies are indicators that some college students are facing challenges associated with improving their mental health.

Challenges for Colleges and Universities

College students are not the only ones facing challenges surrounding their depression and mental illness; colleges and universities are facing challenges due to strict federal and state regulations in the area of mental health. The Americans with Disabilities Act (ADA) (1990) identifies psychiatric disorders as disabilities, making individuals suffering from psychiatric disorders subject to the ADA if the disorder substantially impacts one or more major life activities. Universities are considered a place of public accommodation by the ADA (1990). Therefore to comply with ADA standards (1990), universities must not discriminate against individuals on the basis of disability and must provide equal access to education for those individuals. In 2004, the more specific issue of college student mental health reached Congress, and in response,

the Garrett Lee Smith Memorial Act was enacted that created three programs: (1) a campus suicide prevention program, (2) a suicide prevention technical assistance center, and (3) a youth suicide early intervention and prevention strategies program (American Psychological Association, 2011). In 2011, the Department of Justice altered wording in Title II of the Americans with Disabilities Act to tighten the criteria and conditions required before a college or university can remove a student from campus (Kingkade, 2014). These two federal efforts bring national recognition to collegiate mental health issues. However, states are also bringing forth legislation to prompt students to seek help. Some states enacting legislation include Virginia and Texas. Virginia now requires college violence prevention teams to designate reporting structures for faculty and staff to notify officials about anticipated physical threats, including notifying family members (NAMI, 2014). Virginia also requires four-year public institutions to publish mental health resources on the colleges' website (NAMI, 2014). Texas Senate Bill 1624 (2015) established similar conditions by requiring Texas public colleges and universities to give entering undergraduate students a live presentation or video on mental health awareness and suicide prevention (Blanchard, 2015).

Colleges are also faced with concerns of retention of students facing mental illnesses. Signs of mental distress often show up in a student's academic work and behavior in the classroom (Howard, 2015). Koch, Mamiseishvili, and Higgins (2014) looked at persistence rates of students with psychiatric disabilities enrolled at U.S. postsecondary institutions by summarizing data from the Beginning Postsecondary Students Longitudinal Study. Findings indicated a 76.6% persistence rate from first-to-second year, with persistence rates decreasing to 61% over three years. Additionally,

persistence to degree completion rates were found to be 54.7%, which is similar to that of students identified as “at-risk” at postsecondary institutions (Koch, Mamiseishvili, and Higgins, 2014). In another longitudinal study, the researchers assessed stress and depression as predictors of year-end degree commitment and cumulative GPA in 286 first-year students (Ruthig, Haynes, Stupnisky, & Perry, 2009). In the study that was conducted in three survey phases, the researchers found depression was an indicator of a lower cumulative grade point average (GPA) and decreased year-end persistence (Ruthig et al, 2009). Since lower GPAs sometimes force colleges and universities to withdraw students, GPA is a persistence factor needing attention.

The authors of one study took a closer look at GPAs with regard to how mental health predicts academic success in college (Eisenberg, Golberstein, & Hunt, 2009). The researchers found that depression and co-occurring depression and anxiety are associated with lower GPAs. Furthermore, lack of pleasure or interest in normal activities, which is a symptom of depression, is the strongest predictor of poor academic performance (Eisenberg, Golberstein, & Hunt, 2009). If students cannot succeed academically, they may involuntarily or voluntarily leave the institution of higher education.

Some colleges and universities are trying various strategies to help students succeed academically and get the help they need. One strategy is providing counseling services. Of students who receive counseling, 70% indicate attending counseling helped improve their academic performance (Reetz, D.R., Krylowicz, B., and Mistler, B., 2014). Colleges are also responding by hiring more counseling personnel, but unfortunately mental health services have not been immune to recent budget cuts making it difficult to afford additional staff (Baker, 2015). In response, colleges are creating a layered

approach by creating safety nets across campus (Howard, 2015). Layered approaches include offering a rapid-response team to handle imminent emergencies, and training faculty and staff to help identify signs indicating a student may be suffering from a mental illness (Howard, 2015). Rapid-response teams are also known as behavioral intervention teams and are tasked with responding to students of concern (The Advisory Board Company, 2012). These teams are typically comprised of six university officials within student affairs, academic affairs, university police, general counsel, counseling services, and disability services (The Advisory Board Company, 2012). Some colleges are even offering voluntary suicide prevention programs for faculty, while others are inviting faculty to infuse mental health issues into class curricula (Howard, 2015). One research brief by The Advisory Board Company (2011) identified several strategies for handling client overload, including utilizing others on campus for mental health services such as drug and alcohol centers or clinics offered by the psychology academic program, utilizing external community partnerships for long-term therapy, and utilizing group counseling. Other research briefs by The Advisory Board Company indicate efforts at some colleges to integrate wellness resources on campus to create knowledge and resource hubs to maximize student use (2014). Strategies include (1) employing a central wellness dean or director who reports to the division of student affairs, (2) creating centralized physical and administrative structures for wellness services and programs including sharing facilities with Campus Recreation departments, (3) emphasizing the importance of wellness for student success and as a risk management strategy to help garner support, (4) developing a wellness advisory group, (5) allowing for peer education to assist in health promotion efforts, and (6) offering a variety of mental health services

and physical health services to reach more students (The Advisory Board, 2014 & 2014). Finally, Hill, Yaroslavsky, and Pettit (2015) proposed depression screening to identify at-risk students early and during a study of 150 college students found that social disconnection and negative feedback-seeking behaviors were associated with persistently elevated levels of depressive symptoms. They suggested colleges screen to perhaps increase the identification of students needing early treatment. Each strategy cited requires an investment of college resources (Hill et al. 2015).

Challenges for College Counseling Centers

In addition to campuses having to comply with strict regulations and seeing more campuses invest in mental health resources and training, counseling centers on campuses are struggling to keep up with the demand for services due to the increasing number of students entering college with mental illnesses (Wilson, 2015). In a 2013 national survey of college counseling centers, 11.4% of students indicated that they had sought individual or group counseling (Gallagher, 2013). The students surveyed came from more than 203 colleges and universities, with approximately 1.8 million students completing the survey. Even more astounding was the fact that the availability of counselors was minimal with only one counselor to serve every 1,604 students. This in part explains why 35% of college counseling centers report long waiting lists. To deal with the waiting lists, various techniques were used including (1) staff overload, (2) shorter appointment times, (3) added external referrals, (4) additional part time staff, and (5) moving less critical clients to group counseling (Gallagher, 2013). These techniques may reduce waiting lists but may not address the mental health concerns of students fully, leaving gaps in the treatment process.

The 2014 national survey of college counseling center directors by the Association for University and College Counseling Center Directors (AUCCCD), which included 497 completed surveys in the July 1, 2013 to June 30, 2014 fiscal year, provided a broader picture of the challenges faced by college counseling centers (Reetz, D.R., Krylowicz, B., and Mistler, B., 2014). Nine percent of college counseling center directors considered themselves a one-person operation, and those colleges range in size from 97 enrolled students to 19,887 enrolled students. More than 32% of counseling center directors indicated there was no training program in place for their staff. Only 78.4% of centers included in the study provided service year round and 49.6% of centers limited (or limited with some flexibility) the number of counseling sessions allowed to a client (Reetz, D.R., Krylowicz, B., and Mistler, B., 2014).

Students mention several barriers to receiving care at a college mental health facility, some of which are congruent with statistics provided in the AUCCCD survey. The main barrier reported by students in a National Alliance on Mental Health (NAMI, 2012) survey was the stigma associated with seeking help. Other barriers noted by over 15% of respondents include having a busy schedule, the limited hours of service at the collegiate counseling center, lack of information regarding available services, and having to wait a long time for an appointment. Additional concerns mentioned by students in the survey were (1) excessive documentation needed in order to access care, (2) inexperienced providers, (3) high staff turnover creating a lack of consistency in providers and services, (4) individual caps on the amount of mental health services one student can receive, and (5) a fear of being seen by friends (NAMI 2012). Colleges and

universities must find alternate ways to handle the issues faced by centers and those brought forth by the students to halt the current college student mental health trajectory.

A Comprehensive Approach to Mental Health

The Jed and Clinton Health Matters Campus Program Framework for Success (See Figure 1) provides a comprehensive way for campuses to approach promoting mental health, and prevent suicide through programs and services (The Jed Foundation, 2014). The Campus Program Framework for Success identifies nine factors to consider when developing a strategic approach to mental health. Beyond policy, planning, and environmental factors to consider, there are several student wellness implications. First, the framework mentions the need to develop life skills to teach healthy ways to cope with the stress of college (The Jed Foundation, 2014).

> Life-skills education can be implemented across campus through clinical and non-clinical staff such as health educators and student affairs staff. An increased focus on life skills development may also ease the burden on counseling centers, because it might limit or prevent some problems from emerging in ways that require clinical care (The Jed Foundation, 2014, Develop Life Skills section, para. 2).

Figure 1. The Framework for Success

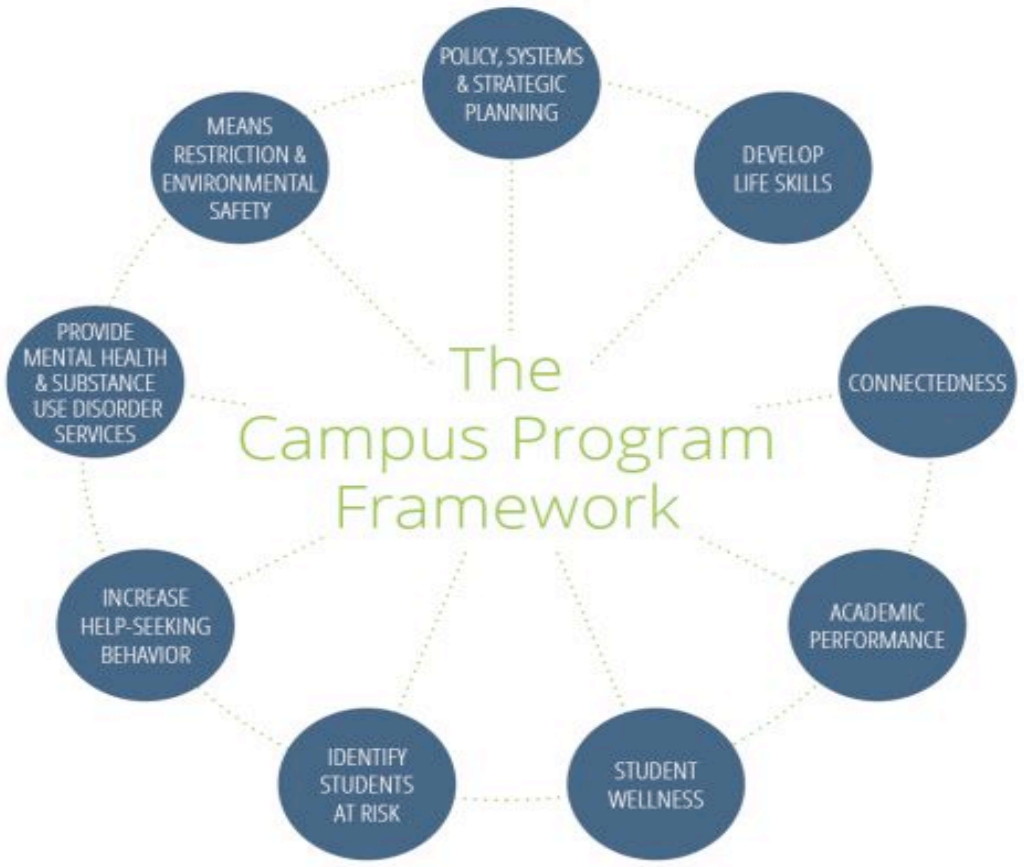

Figure 1. The Jed and Clinton Health Matters Campus Program Framework for Success shows several areas for campuses to focus efforts to provide a comprehensive approach to student mental well-being. Taken from The Jed Foundation (2014), Retrieved from http://www.thecampusprogram.org/framework-for-success.

The framework also promotes connectedness by encouraging students to get involved on campus and to develop supportive social relationships. The Jed and Clinton Foundation's framework states that "healthy living and academics can be thought of as two complimentary ingredients" and that campuses need to make the connection "between good physical and emotional health and academic success" (The Jed Foundation, 2014,

Academic Performance section, para. 1 and bullet 4). Finally, the framework references student wellness that emphasizes participation in exercise programs and other healthy behaviors to create balance (The Jed Foundation, 2014). With the Jed and Clinton Health Matters Framework in mind, I turn my attention to the impact of integrated care and exercise on student mental health care.

Integrated Care

Some universities have turned to integrated care for the identification and treatment of psychological disorders, including depression. Integrated care is providing a continuum of preventative and curative health services across different levels of the health system to best manage and deliver services to clients (World Health Organization, 2008). Some colleges and universities are integrating health services and counseling centers. More than 26% of counseling center directors indicated their departments were administratively integrated within health services and 31.1% of counseling center directors reported having their operations located in a health services building (Reetz, D.R., Krylowicz, B., and Mistler, B., 2014). More than 17% of college counseling centers reported sharing an electronic medical records system with Health Services (Reetz et al., 2014).

Some college and university health centers, which operate like primary physician offices, are actually screening for mental illnesses. Mackenzie et al. (2011) asked 1,622 university students to take the Beck depression inventory, a screening for major depression, upon arrival at a non-urgent primary care visit to university health services. The results of the survey indicated a positive screening for depression in 26.4% of females and 24.7% of males. Mackenzie et al. (2011) mentioned the connectivity of

depression to other health issues.

> We found that depression is associated with a number of health issues including tobacco use, unwanted sexual experiences, and other forms of victimization or violence. The data suggests [sic] that if students screen positive for depression, simultaneous screenings for these other issues should be performed. Treatment of one condition (e. g., use of selective serotonin reuptake inhibitors for depression) without dealing with potential contributing factors (e.g., interpersonal violence) may limit the effectiveness of treatment (p. 105-106).

Since the majority of students utilize college health centers for common illnesses, it is a great place to identify and potentially treat mental illness concerns such as depression.

An article titled "Considerations for Integration of Counseling and Health Services on College and University Campuses" (2010) identified several counseling and health centers that utilize integrated care to determine its positive and negative effects. Positive effects from integration mentioned included timely and efficient referrals, satisfaction by students, improved professional development, increased teamwork, and collaboration with quality assurance issues. Some challenges noted were initial resistance from clinicians and concern over shared access to records.

Integrated care can help in the identification process of students in need of treatment, but it can also provide viable intervention options. One study of the Virginia Commonwealth University Health System used 55 doctors to refer patients to an on-site psychological training clinic (Sadock, Auerbach, Rybarczyk, & Aggarwal, 2014). Four hundred and fifty-two adult patients received a referral to have psychological clinicians complete an initial assessment and brief intervention. Of the 452 patients, 42% decided

to return for more than one visit for a total of 972 visits (Sadock et al., 2014). Return visits indicated some individuals are receptive to the process of referral and treatment, but the partnership between counseling and health services is only one potential partnership. Next I explore the connection between exercise and mental health.

Exercise and Mental Health

The Jed and Clinton Foundation's Campus Program Framework for Success suggests that exercise is an important element in the improvement of college students' mental health (The Jed Foundation, 2014). The framework advocates for physical activity or exercise and ties physical activity to better academic performance, to the development of lifelong coping skills, and to the creation of a balanced student (The Jed Foundation, 2014). Sharma, Madaan, and Petty (2006) suggest that mental health professionals and patients do not sufficiently understand the importance of exercise and that exercise may be a neglected mental health intervention. Callaghan (2004) also reports exercise improves mental health patients' quality of life; yet the value of exercise is rarely recognized by mental health care professionals. Callaghan (2004) describes exercise referrals as an intentional referral from a healthcare office to an exercise facility for supervised activity. Exercise referrals are intentional and include (1) individualized screening, (2) assessment, (3) specific activities for specified periods of time delivered by exercise professionals, and (4) evaluation of the intervention (Callaghan, 2004). Kim et al. (2012) studied the relationship between physical activity and mental health to determine the optimum amount of exercise for mental health benefits. Results specified 2.5 hours to 7.5 hours per week as the optimal range of physical activity for mental health benefits (Kim et al., 2012).

Bland, Melton, Bigham, and Welle (2014) researched physical activity behaviors to determine which types of activity were associated with high stress tolerance in college students. All 936 student participants filled out a physical activity log and completed a stress tolerance questionnaire. The most utilized coping mechanisms by students were listening to music, sleeping, relaxing, and feelings of support from friends/family/instructors. Physical activity was not listed as one of the top ten coping mechanisms for students. However, statistically significant results from the research indicate exercise, leisure activities, extracurricular activities, and extracurricular sport activities are more likely to be utilized by students with high stress tolerance. Furthermore, three of four types of exercise were significantly associated with high stress tolerance including vigorous exercise, stretching and strength training (Bland et al., 2014). Aselton (2012) studied the emotional environment for 13 depressed students through a phenomenological research approach and physical activity was a frequently cited way to relieve stress. Since exercise can be a stressor for the body, how does exercise reduce the harmful effects of other stressors?

Deslandes et al. (2009) articulates the neurophysiological effects of exercise on the body as an explanation for how exercise can impact mental health. Animal research indicates exercise increases the brain-derived neurotrophic factor (BDNF), a response equivalent to what an antidepressive drug does to a human. Exercise also increases the insulin-like growth factor (IGF-1), which is associated with improved cognitive functioning. Exercise also increases serotonin levels, dopamine levels, acetylcholine levels, and norepinephrine levels, which are related to a sense of well-being, pain relief, and mood enhancements (Deslandes et al., 2009).

Gondoh et al. (2009) also explored the psychological effect of exercise. They utilized an experimental design to study 30 college students; 15 students who did not regularly exercise were assigned to the training group and 15 students were assigned to the control group. Prior to the experiment and after completion of the aerobic exercise intervention, the two groups did not differ significantly in height, weight, and estimated maximum oxygen uptake (VO_{2max}). After the exercise period, the psychological questionnaire results showed the training group had a significant improvement in the Center for Epidemiologic Studies Depression Scale (CES-D), which suggests that aerobic exercise training decreases symptoms of depression, and the Identity Scale (IDS), which suggests aerobic exercise training improved identity formation in the training group. However, the control group did not experience the same improvements. The results indicate group training is a worthwhile consideration for an intervention. Gondoh et al. also compared changes in gray-matter volume in the brain between the two groups. Results indicated that exercise decreases gray-matter volume in the left insula of the brain. According to Gondoh et al. (2009), the left insula region of the brain is important to the psychological well-being of humans. Research (Aselton, 2012; Bland et al., 2014; Deslandes et al., 2009; Kim et al., 2012; Gondoh et al., 2009) indicated exercise may impact mental health by influencing brain function and one's ability to handle stressors. Now, I turn to specific research looking at exercise as it relates to depression.

Exercise and Depression

Some studies specifically look at the physiological and psychological response of exercise on depressive symptoms. Wipfli, Landers, Nagoshi, and Ringenbach (2011) conducted a 7-week exercise intervention for 72 undergraduate students in kinesiology

classes who met certain pre-participation criteria and who were randomly assigned to either a stationary cycling intervention group or a stretching control group. The study aimed to measure the effects of aerobic exercise and yoga stretching on mental health measures, including levels of depression, anxiety, self-efficacy and serotonin. Participants ranged in age from 18-31, with an average age of 20.66, and there was attrition of 5 cycling intervention participants and 2 stretching control group participants during the study. Between groups, there was no difference in the depression scores pre-treatment. Post-test revealed a significant decrease in depression for the cycling intervention group when compared to the stretching control group. Results also supported a significant decrease in serum serotonin levels post cycling intervention when compared to the yoga stretching control group (Wipfli et al., 2011).

Taliaferro, Rienzo, Pigg, Miller, and Dodd (2009) used logistic regression modeling to compare various levels of physical activity in college students with the odds of experiencing hopelessness, depression, or suicidal behaviors. Researchers in the study found that both males and females had a decreased likelihood of experiencing hopelessness, depression, or suicidal behaviors when participating in some physical activity when compared to a control group who performed no physical activity (Taliaferro et al., 2009). Another group of researchers found similar results when students participated in a ten-week, online-based physical activity intervention program (Mailey, Wójcicki, Motl, Liang, Strauser, Collins & McAuley, 2010). Increased physical activity was associated with decreased depression (Mailey et al., 2010). Elliot et al. (2012) looked at the national survey results for the National College Health Assessment (NCHA) for 107 of 113 participating institutions between February and May 2007 who

claimed the use of random sampling. Elliot et al. (2012) analyzed college students' physical activity and gender on the frequency of students' depressive and suicidal symptoms. Results indicated that for both genders higher frequency of physical activity was related to less frequent depressive symptoms and less contemplation of suicide. They recommended colleges provide more access and knowledge to students on the topics of emotional health and explain the benefits exercise can have on one's psychological well-being (Elliot et al., 2012).

The level of physical activity or individual dissatisfaction with exercise may also impact depression. Edman, Lynch, and Yates (2014) studied relationships between depressive symptoms, performance dissatisfaction, body dissatisfaction, and physical exercise. The sample consisted of 895 undergraduate students who voluntarily took a survey administered in one of their academic classes. Results of the study showed exercise performance dissatisfaction and body dissatisfaction are both independently, positively associated with depressive symptoms for both males and females (Edman, Lynch, and Yates, 2014). VanKim & Nelson (2013) took this idea a step further by specifically examining if the level of physical activity impacted mental health. The results indicated that vigorous physical activity was inversely associated with poor mental health and high stress (VanKim & Nelson, 2013). Therefore, it is important to recognize when exercise has a negative impact on overall health.

Rutter et al. (2013) examined the relationship of having Posttraumatic stress disorder (PTSD) symptoms or depressive symptoms to health behaviors, including participation in physical activity. The study specifically looked at 200 undergraduate students enrolled in an introductory psychology course, all who took six self-report

instruments that assess participant trauma history, symptoms of PTSD, symptoms of depression, degree of engagement in physical activity, negative health symptoms, and health-related quality of life. Results of the study indicated depressive symptoms are significantly associated with decreased engagement in exercise and that less-frequent exercise is significantly associated with poor functional health and more negative health symptoms. The researchers explained that loss of interest and enjoyment in activities are characteristics of PTSD and depression, which may explain why individuals with PTSD or depressive symptoms have a loss of motivation when it comes to exercise (Rutter et al. 2103). Knepp, Yoza, and Quandt (2015) reported similar findings after assessing the results of completed design fluency tasks, as well as surveys measuring depressive symptoms and thoughts about exercise habits and motivation to exercise, that were given to 120 undergraduate students from a midwestern institution. They found that students with higher scores on depressive symptoms have both fewer exercise habits and a lower motivation to exercise. Although exercise may be a potential treatment option for depressive symptoms, depressive symptoms may be a deterrent to exercise (Knepp, Yoza, and Quandt, 2015).

Limitations of Existing External Research

Although existing research provides valuable supporting documentation, there are still several limitations that need exploring:

1. Since mental health is unique to the individual, it is difficult to generalize outcomes of existing research to the general population. Additionally, every class of students brings with them new challenges that add to the dialogue regarding mental health.

2. Existing research on exercise and depression utilized students who were identified through a pre-existing structure, such as an academic class (Wipfli et al., 2011, Rutter et al., 2013, Edman, Lynch, and Yates, 2014). Students then had to self-identify as experiencing depressive symptoms through surveys. There is always the possibility that a student may not be truthful on the survey.
3. Existing studies tracked students during a very specific period of time, but did not incorporate long-term behavioral impact into the research. For example, even if exercise showed to improve depressive states or overall mental health, did the student maintain habits post-study or intervention?
4. A large portion of existing research on exercise and depression or mental health is limited to quantitative survey data (Rutter et al, 2013, Wipfli et al., 2011, Taliaferro et al., 2009, Mailey et al., 2009, Elliot et al., 2012, Knepp, Yoza, and Quandt, 2015, Kim et al., 2012, Edman, Lynch, and Yates, 2014, Vankim and Nelson, 2013, Gondoh et al., 2009, Bland et al., 2014). The research did not provide context for qualitative data, which is interesting considering each person is unique and may experience different symptoms.
5. Another limitation is current studies on exercise and depression provide a disjointed look at the broader picture. Some studies examined specific psychological or physiological effects of exercise (Wipfli et al., 2011), while others looked at frequency or amount of exercise (Taliaferro et al., 2009, Mailey et al., Elliot et al., 2012, Rutter et al., 2013, Knepp, Yoza, and Quandt, 2015, Kim et al., 2012), or specifically intensity of exercise (Edman, Lynch,

and Yates, 2014, Vankim and Nelson, 2013). Some studies provided very prescriptive exercise regimes, limiting findings to only one or two modes of exercise (Wipfli et al., 2011, Gondoh et al., 2009, Bland et al. 2014), while others allowed for self-prescription of exercise regimes, which creates challenges around monitoring intensity and safety. No studies provided a broader, case study look at the impact exercise has on depression; nor did they allow exercise prescriptions to be developed by a fitness professional and to be unique to the participants' needs and wishes. As a result, the existing research picture is incomplete.

Next I turn to research specific to WCU, with regard to mental health, depression, and exercise.

Research Specific to WCU

WCU statistics are alarmingly similar to nationwide statistics with regards to students' mental well-being. WCU also conducted the National College Health Assessment (NCHA) by the American College Health Association (ACHA) (American College Health Association, 2010) in 2010 and found over 25% of students mentioned experiencing depression in the last 12 months with over 10% stating it affected their academic performance. During 2010, WCU had a combined undergraduate and graduate enrollment of 8,312 FTE (Western Carolina University, Office of Institutional Planning and Effectiveness, 2013). Alarmingly, 2010 data also revealed 8% of WCU students seriously considered attempting suicide in the last 12 months (American College Health Association, 2010). WCU repeated the ACHA-NCHA survey in Fall 2013, during which time WCU had a combined undergraduate and graduate enrollment of 9,038 students, using the second version of the survey (Western Carolina University, Office of

Institutional Planning and Effectiveness, 2013). The second version of the survey is the result of changes made by ACHA, so results cannot be directly compared between 2010 and 2013 results. However, 2013 WCU results indicated over 35% of WCU students felt so depressed it was difficult to function sometime during the last 12 months and 15% seriously considered suicide in the last 12 months (American College Health Association, 2013). More recent data show an increase to over 35% of WCU students who sought services at WCU Counseling and Psychological Services (CAPS) noting seriously considering suicide at least one time (Gorman, 2014). Even more alarming is that 17.5% of WCU students reported considering causing serious physical injury to another person (Gorman, 2014).

In 2015, WCU administered the National Survey of Student Engagement (NSSE) to first-year students and seniors. When students were surveyed on the following question "How much does your institution emphasize the following?" (Indiana University, 2015, p. 14 & 32), first-year and senior responses were relatively similar to the category "Providing support for your overall well-being (recreation, health care, counseling, etc.)" (Indiana University, 2015, p. 15 & 33). Out of 301 first-year students, 3% responded very little, 16% responded some, 28% responded quite a bit, and 52% responded very much with regards to WCU providing support for students' overall well-being (Indiana University, 2015). Out of 313 senior respondents, 10% answered very little, 18% answered some, 31% answered quite a bit, and 41% answered very much (Indiana University, 2015). Although responses are between the two cohorts, seniors had higher response rates in the very little and some categories. Despite more students

responding quite a bit or very much with regard to the level of support they felt, it is still necessary to address the need to provide a greater level of support for some students.

At WCU, CAPS continues to be the main resource for students with mental illness. In the 2014 WCU Division of Student Affairs Annual Report, CAPS reported 43% and 46% of students in Fall 2013 and Spring 2014 respectively improved their level of distress while engaged in counseling as measured by the Counseling Center Assessment of Psychological Symptoms (CCAPS). In Spring 2014, 46% of CAPS clients presented with depression related concerns, as compared to 29% in 2013 (Western Carolina University, Division of Student Affairs, 2014). The majority of students seeking services at CAPS identified as female at 66%, with only 33% identifying as male and 1% identifying as transgender (Western Carolina University, Division of Student Affairs, 2014). Of students seeking CAPS services, each grade level from first-years to seniors represented 20-25% of the clients with graduate students only making up 12% of the client population (Western Carolina University, Division of Student Affairs, 2014). Finally, using a Likert Scale of 1 (best) to 5 (worst), Fall 2013 clients scored CAPS an average of 1.49 on satisfaction with overall experience and a 1.77 on whether counseling has helped them be more successful at WCU (Western Carolina University, Division of Student Affairs, 2014). In the 2014-2015 academic year, CAPS saw a 27% increase over the previous year in initial appointments and a 12% increase in the number of unique students served with 965 students. Over 100% of available appointment times were used, adding 98 hours of extra appointment times beyond standard capacity. Five percent of the total service hours to students by CAPS in 2014-2015 were for emergency services (Western Carolina University, Division of Student Affairs, 2015).

One of the ways CAPS works to provide a continuum of care is by collaborating with Health Services at WCU to administer psychiatric evaluations and medications for students with mental illnesses and for those dealing with depression. However, counseling is one of the only structured approaches to treating mental illness at WCU. Since limited coping abilities has a significant impact on college student psychological distress (Byrd & McKinney, 2012), it is important that WCU continue to seek other ways of decreasing depression on campus through the enhancement of lifelong coping strategies. Providing intentional coping strategies for students to manage depression allows them to function better academically and socially, providing for greater persistence rates and a safer campus. Next I look at the current initiatives taking place at WCU.

Current Initiatives at WCU

In addition to complying with federal and state policy, WCU has three main ways of addressing student mental well-being. The first way is through an early identification process called the Issue Alert System. The WCU Issue Alert System is in place to identify students who are experiencing difficulties academically, socially, or otherwise, early. This is a reporting system for faculty who are concerned about a student. The system helps identify issues early to provide interventions for students to help them make positive choices and display lifestyle behaviors that will impact their academic success. If a faculty member identifies a concern that is non-academic, the concern is referred to the Student Concern Response Team (SCRT).

The second way WCU addresses student well-being is through a Student Concern Response Team (SCRT). The SCRT is a behavioral intervention team comprised of

individuals across campus, including individuals from University Police, Academic Affairs, Student Affairs, and General Council. The team meets bi-weekly during the academic year to discuss students of concern to determine the best possible resources and course of action to help individual students, including interventions that may have a mental health component. Additionally, the team has a booklet titled *Helping Students* that is available for faculty and staff.

The third area wherein WCU addresses student mental well-being is through programs and services. WCU has a health and wellness unit within the division of Student Affairs comprised of three departments to tackle the main student issues surrounding personal well-being. The three departments are Counseling and Psychological Services (CAPS), Campus Recreation and Wellness (CRW), and Health Services (HS). The unit was established in 2008 upon the hiring of an Assistant Vice Chancellor for Student Affairs, who led the attempt to create a more integrated effort. Since that time, the three departments have collaborated on various health and wellness efforts but continue to work toward providing a cohesive and unified approach to health and wellness initiatives on campus. CAPS and HS created an integrated care model, an effort that was possible due to the sharing of a facility.

Health Services provides services to aid student mental health. First, physicians at WCU may identify students who are in need of mental health services. In addition to possibly prescribing medication for the student to manage their mental health, HS providers also work to refer students to CAPS so the student receives a continuum of care. CAPS may also call upon HS if a counselor determines medication may be useful in a student's treatment and the student has not yet had an appointment with a HS

provider. In some cases, CAPS may refer a student directly to an external, part-time consulting psychiatric provider as well. Finally one of the HS providers and the Director of HS, meet regularly with CAPS staff to have case conferences in an effort to ensure students are receiving the highest level of care possible.

Regardless of whether the student is referred from HS or self-identifies as needing assistance, counseling at CAPS is the main service in place to address the growing issue of students with depression on campus. Students can call for an appointment at CAPS or walk in at any time during normal business hours. CAPS also offers after hours, emergency coverage for students as needed when activated through the University Police Department. Although counseling is vital to the ongoing well-being of students at WCU, it is reactive since students seek help after experiencing difficulty with personal well-being. Additionally, CAPS continues to see a rise in the number of students with depression and other mental illnesses without an increase in the number of personnel to address the growing concern. CAPS addresses the growing number of clients in various ways including providing group counseling sessions on a weekly basis and by referring students who have long-term or specialized needs to off-campus services. CAPS also does campus outreach to educate students about mental well-being, but outreach is limited by resources since CAPS' primary roll is to provide counseling services.

Finally, Campus Recreation and Wellness provides fitness and wellness programming, facilities, and services for students. CRW collaborates with CAPS, HS, and various other campus departments on wellness programs including Red Zone Awareness, Love Your Body Week, National Eating Disorders Awareness Week, National Nutrition Month, Alcohol Awareness Week, and more. One of the ways the

Health and Wellness Unit educates the campus community on healthy living topics other than through programming efforts is through peer education. Peer Educators, who are students at WCU, provide presentations to groups or classes to discuss important health topics in a non-invasive setting. Despite peer education efforts, there are still limited partnerships to promote the benefits of exercise across campus instead of just to regular patrons of the Campus Recreation Center. This brings me to a discussion of the gaps that exist in both the WCU data and in existing partnerships on campus.

Gaps in Current Initiatives at WCU

Although current programs and services at WCU provide valuable resources for students with depression, there are current gaps and limitations in the existing initiatives:

1. As a greater percentage of the WCU student body utilizes CAPS services for short-term counseling or group counseling, CAPS personnel resources become more strained. The easy solution of adding more staff is elusive due to limited budgetary resources. Since the CAPS budget is a portion of the health fee paid by individual students, the only ways to increase the budget are to (1) increase the full-time enrollment of students, (2) increase the health fee, or (3) divert some of the health fee that goes to health services to CAPS. Unfortunately, more students may mean even more strain on CAPS resources. One way CAPS identified to address the issue of over 100% usage of appointment times in 2014-2015 was to hire an additional doctoral intern (Western Carolina University, Division of Student Affairs, 2015). It is important that WCU continue to assess the number of doctoral internships

versus the quality of service and experience provided to both the intern and the students receiving mental health services at CAPS.

2. The majority of mental well-being programs and services are reactive in nature. CAPS outreach programs are mainly focused on breaking down the stigma of mental health care. The CAPS programs that are focused on preventative mental health only reach the portion of students who voluntarily listen or attend or those who are forced to attend for academic purposes. Finally, although some CRW programs and services may impact mental well-being, currently there is no education for WCU students on this topic.
3. Despite the coordinated care efforts between CAPS and HS, there are still additional ways for the Health and Wellness Unit to provide a more unified and cohesive approach to health and wellness. More specifically when it comes to mental health care, CAPS and HS have established continuum of care collaborations. However, CRW is not currently integrated into WCU's approach to mental health care. Additionally, physical location is currently a barrier to providing timely, coordinated care since CRW is located across the campus from CAPS and HS. According to the Advisory Board Company (2014), "student affairs leaders develop health promotion offices to advance the health and wellness of students" (p. 4), and include service offerings in areas of mental health, physical wellness, alcohol and other drugs, and healthy relationships.
4. Other than faculty and staff identifying students through the issue alert system and student concern reporting mechanism or students self-identifying with

CAPS or HS, there is not currently a system in place to screen students early to identify those who may be at risk for developing a mental health concern.

5. Faculty and staff also do not currently receive training on identification of symptoms that may indicate a student is in distress. Lack of knowledge on what signs to look for in a student or what to report in the early issue system may be a barrier for faculty and staff to follow through with reporting.

Conceptual Framework

Prior literature, current initiatives, limitations of existing research and initiatives, and other conceptual frameworks helped to inform my intervention. As previously mentioned, prior research was limited in scope and available qualitative data. Since the student experience is a portion of the process to improve mental well-being, it is important to treat each student as a unique individual. Furthermore, if exercise does indeed help the mental well-being of college students, the long-term impact of collaborative efforts is currently overlooked. It is important to look beyond the problem to an intervention that can serve as a piece of the solution.

Utilizing components from Zubin's (1987) Stress-Vulnerability model and the Jed Foundation's Campus Program Framework for Success, my conceptual framework illustrates what I believe is an effective strategy for decreasing depression in college students at WCU. I suggest that stress is a component of depression. Therefore, implementing an exercise intervention in addition to counseling will help students reduce stress, and ultimately lead to a reduction in depressive symptoms. My conceptual framework is represented in Figure 2.

Figure 2. Conceptual Framework

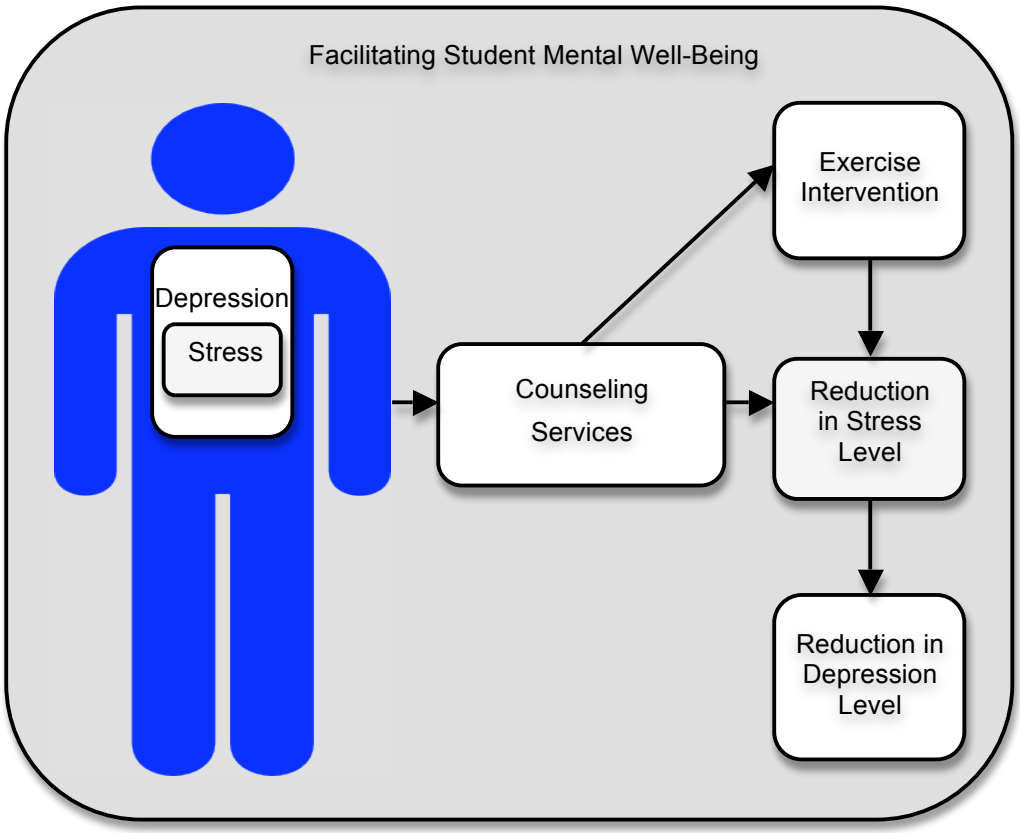

Figure 2. Facilitating student mental well-being for students experiencing depressive symptoms includes a comprehensive approach involving both counseling and exercise.

Despite the focus of the intervention being on exercise as a lifelong coping strategy to help students manage depressive symptoms, exercise cannot be thought of as a stand-alone intervention since it will happen in conjunction with counseling. Both can influence stress levels, so special consideration will need to be given to the collection and interpretation of the data. The methodology of this intervention is presented in the next section.

CHAPTER THREE: METHODOLOGY

In this chapter I provide a detailed description of the methodology utilized throughout the intervention. After an overview of the research purpose and design, I discuss the completed pilot intervention. I then discuss the participants including participant recruitment, identification, and selection, as well as a demographic representation of my study participants. Finally, I discuss the data collection and data analysis procedures.

Research Purpose and Questions

In this improvement effort, I sought to address the rising number of students with depression on WCU's campus and to improve the lifelong coping skills of students with depression by introducing an exercise intervention. Exploring the impact exercise has both acutely and long-term on students' depressive symptoms allows administrators to make more educated decisions about how to proactively address mental health needs on WCU's campus and how to alleviate some of the added pressure currently being put on CAPS.

The purpose of this improvement effort is to implement an exercise intervention for traditionally aged students with mild to moderate depression to reduce stress levels, ultimately resulting in a reduction of depressive symptoms. With this improvement effort I sought to address three questions:

1. What are the barriers that prevent WCU students with depression from pursuing a regular exercise program?
2. Does an exercise intervention decrease the prevalence of depressive symptoms in WCU students with depression?

3. Does an exercise intervention assist in the development of regular exercise habits for WCU students with depression?

Research Design and Data Analysis

Creswell (2012) describes action research as addressing a specific problem in an educational setting and seeking to address the problem by obtaining solutions. This type of research allows educators to improve educational settings by taking action. According to Creswell, there are two types of action research: practical action research and participatory action research. This study utilizes the practical action research design, which Creswell (2012) describes by the five qualifying statements (pg. 579):

1. "Studying local practices";
2. "Involving individual or team-based inquiry";
3. "Focusing on teacher development and student learning";
4. "Implementing a plan of action"; and,
5. "Leading to the teacher as researcher".

Practical action research focuses on a specific problem and involves small-scale research, which is taken on by an individual or a team of individuals within a school (Creswell, 2012). For this intervention, there were design and implementation teams which are discussed in further detail in the next sections. The methodology utilized in this intervention is consistent with action research, which can involve either or both quantitative and qualitative research. This intervention utilizes both quantitative and qualitative data to gather information. The types of quantitative and qualitative data collected are discussed in the data analysis section. Next I discuss the pilot intervention, for which I utilized the plan, do, study, act framework.

Pilot Intervention

In Fall 2013, through a pilot program, CRW and CAPS tested exercise as a potential intervention for students with varying levels of depression and anxiety. According to Langley, et al. (2009, p. 41), "testing is a way of trying the change on a temporary basis and learning about its potential impact." The framework utilized to test this change was the Plan-Do-Study-Act (PDSA) Cycle, which is an improvement framework that supports improvement processes that are both informal and very complex (Langley, et al., 2009). Langley et al., (2009, p. 24) also emphasizes three improvement-focused questions, which are:

1. "What are we trying to accomplish?";
2. "How will we know that a change is an improvement?"; and,
3. "What changes can we make that will result in improvement?"

These three questions combined with the PDSA Cycle comprise the Model for Improvement (Langley et al., 2009), which is shown in Figure 3. The Model for Improvement that guided this study is outlined in the Charter for Change (see Appendix A). The pilot intervention was utilized to inform the next PDSA cycles. Therefore, the Charter for Change does not show the PDSA cycle for the pilot intervention. The PDSA cycle for the pilot intervention is detailed below.

Figure 3. The Model for Improvement

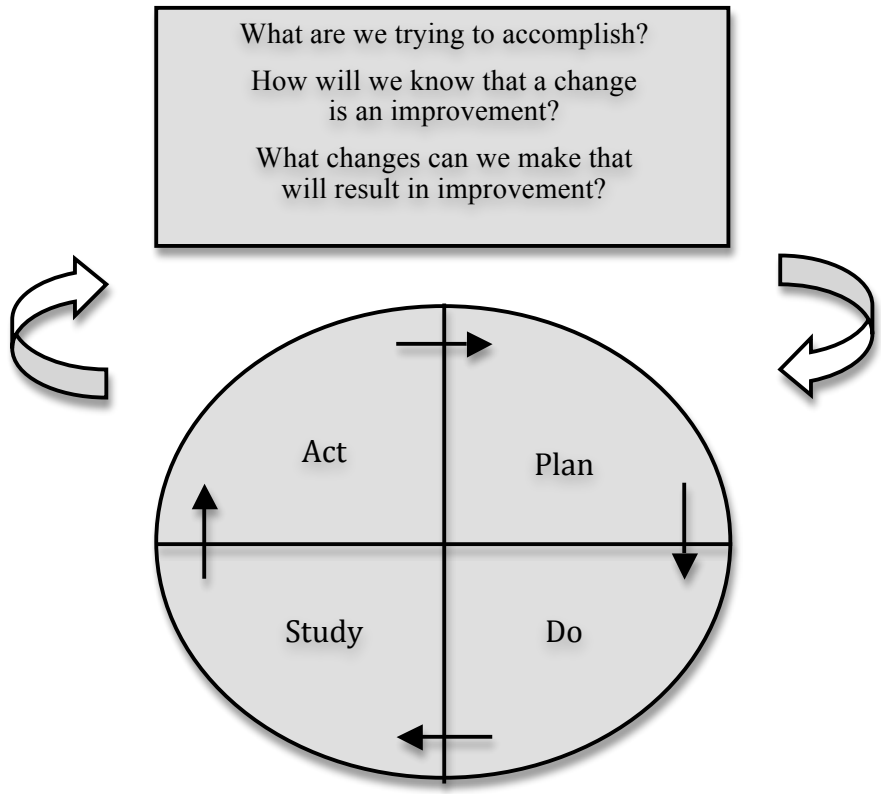

Figure 3. Taken from Langley et al. (2009), p. 24, (Figure 1.1 The Model for Improvement).

CAPS and CRW studied existing literature and drew from previous experiences to develop an idea to address the increasing number of students with depressive symptoms. During Fall 2013, CAPS referred five students who were clinically diagnosed with mild to moderate depression or high anxiety levels to CRW. The referred students agreed to pay eight dollars for two personal training sessions with a nationally certified, student personal trainer, a practice identified by CAPS and CRW staff as necessary to ensure commitment. Once the referred students paid for their sessions, the students were

assigned to a personal trainer by CRW's Assistant Director for Fitness and Wellness. All five students completed both training sessions. However, the students were difficult to follow after the intervention because most completed the sessions immediately prior to the end of the semester. Additionally, adequate evaluation procedures were not in place so CAPS and CRW only received feedback from two of the participants and the feedback was collected during a follow-up counseling session. Those students indicated a positive experience, noting they felt better post exercise but were apprehensive with continuing on their own due to limited knowledge about exercise and difficulty in finding the time to participate.

Since the pilot intervention, the partnership between CAPS and CRW continued through Spring 2015 with minimal participation. No further evaluative measures were put in place due to time constraints of both involved parties. Additionally, counselors did not receive training to understand the benefits of exercise and personal trainers did not receive training to understand mental health challenges to ensure there was a strong continuum of care if students showed deteriorating symptoms. Neither the counselors or the personal trainers truly understood the referral process nor the protective regulations in place designed to both protect the student and meet federal guidelines regarding confidentiality and health information. The only people who had a thorough understanding of the partnership was the Director of CAPS, the Director of CRW, the Assistant Director for Fitness and Wellness, and one CAPS Counselor. These were all important shortcomings to address when developing an effective intervention program and PDSA Cycle routed in assessment, evaluation and, ultimately, improvement.

Organization Teams

CAPS staff and CRW staff were integral players on the design and implementation teams to expand the pilot intervention into a full intervention. The design team consisted of individuals in the following roles.

Director of Campus Recreation and Wellness and Principal Investigator

Assistant Director for Fitness and Wellness with CRW

Director of Counseling and Psychological Services

Counselor with CAPS

The Director and Counselor with CAPS brought knowledge regarding the unique challenges of working with students with depression and provided a voice for CAPS staff in the design process to ensure the process worked for their department. The Director of CRW also met with four members of the CAPS staff, including three counselors and the Director of CAPS, in Summer 2014 to better understand the hesitation to refer clients from counseling and ways to improve current efforts.

The Assistant Director for Fitness and Wellness and the Director of CRW brought knowledge regarding the benefits of personal training and the past challenges, as well as barriers, for participants enrolled in personal training. Additionally, both CRW staff members had a background of awareness about the challenges of working with student personal trainers, specifically around dealing with special populations and around maturity and professionalism when dealing with peer clientele.

The implementation team included several more individuals integral to the success of the collaborative intervention. Unfortunately during the implementation phase, the CAPS Counselor involved in the design team left their position with WCU.

However, the other three individuals from the design team joined the implementation team.

The implementation team also included several other CRW, CAPS, and Health and Wellness Unit members. First, the implementation team had three student personal trainers who were nationally certified and selected by the principal investigator out of a group of five CRW student trainers. The selection criterion utilized by the principal investigator included (1) prior work with special populations, (2) professionalism and motivational characteristics of the trainers determined through observations and interactions with the trainers, and (3) trainer availability that indicated an ability to commit to the intervention. The principal investigator contacted all three selected trainers and each one agreed to participate, including completing Human Subjects Training, attending training regarding the intervention, and committing to carry out the design of the intervention through Fall 2015. The personal trainers were responsible for carrying out a fitness assessment followed by two free one-hour personal training sessions with participants.

The implementation team also included all the counselors and doctoral interns, which consisted of the Director of CAPS, the Clinical Director of CAPS, the Training Director of CAPS, four other counselors or clinical psychologists, and three doctoral interns. The counselors were responsible for identifying potential intervention participants, including (1) reviewing CCAPS assessment data to assist in determining if the clients met intervention criterion, (2) reviewing CCAPS assessment data to determine if the student was interested in learning more about the benefits of exercise, and (3) engaging with participants who may have come in with questions regarding the

intervention based on available promotional material. CAPS staff were also responsible for explaining the basics of the study to interested participants and for completing referral paperwork if the student wanted to schedule an initial consultation with the principal investigator to learn more about the intervention.

The Assistant Vice Chancellor for Student Affairs over health and wellness and the Health Services Director were also part of the implementation team, serving as consultants during the intervention and helping to assess the program post-evaluation to determine future intervention strategies that assist students through integrated care initiatives.

Participant Recruitment, Identification, and Selection

Participants were recruited for this intervention through three main marketing and awareness tools. First, incoming first-year students' parents learned about the intervention during the orientation process. The Assistant Vice Chancellor for Student Affairs at WCU spoke to the parents on the topic of "Play It Smart", which highlighted HS, CAPS, and CRW, as well as campus safety. The presentation also made mention of opportunities to connect students in multiple areas of health and wellness. During this section of the presentation, this intervention was used as an example of ways campus partners provide a holistic health and wellness experience that focuses on student continuum of care.

The second way participants were recruited was through their response to a Counseling Center Assessment of Psychological Symptoms (CCAPS) assessment question. The CCAPS-62 assessment is a 62-question survey provided to clients on their initial visit to CAPS (see Appendix B), and a subsequent 34-question survey (CCAPS-

32) for every subsequent visit after the initial visit (see Appendix C). In the initial visit survey, one question added by CAPS to identify if students wanted to learn more about the intervention was, do you want to learn more about the benefits of exercise? The CCAPS survey was originally developed by the University of Michigan as a free multi-dimensional mental health assessment instrument for colleges that assisted in the clinical, research, and administrative needs of college counseling centers while also providing a way to collect peer-based norms from a large population (Center for Collegiate Mental Health, n.d.). Now the CCAPS-62 includes eight subscales: Depression, generalized anxiety, social anxiety, academic distress, eating concerns, family, distress, hostility, and substance use (Center for Collegiate Mental Health, n.d.).

The third way the intervention was marketed to potential participants was through an informational brochure at CAPS, entitled "Exercise for Depression" (see Appendix D) that further explained the benefits of exercise, the basics of the intervention, and the risks involved with participation. Since CAPS staff and CRW staff wanted to provide broader based participation than what was allowed in the intervention to control for extraneous variables, participation for a similar program with broader based objectives was promoted through a secondary brochure (See Appendix E).

Participants in the intervention were traditionally aged graduate and undergraduate students at Western Carolina University, who ranged in age from 18 years old to 24 years old. Participants could fall in the range of academic status from first-year students through graduate students, but intervention participation was controlled to specifically remove non-traditionally aged students. The reason to purposefully limit to

traditionally aged college students was to eliminate extraneous variables specific to non-traditional populations.

Participants also had to be engaged with CAPS at WCU to participate in the intervention because they had to be classified as having mild to moderate depression by a clinical healthcare provider at CAPS to even fit the criterion for referral. Additionally, students must have had a desire to participate, as participation in the intervention was voluntary.

Charge and Implementation Plan

Over the past two years, the design team worked to develop an intervention for students with depression at WCU to teach students a lifelong coping mechanism while aiming to retain these struggling students. The initial design and pilot were done through departmental connections at the institution but prior to the implementation phase of the actual intervention, I received Institutional Review Board approval (see Appendix F). The implementation team built on the work of the design team by completing three core exercises. First, during the Fall 2015 semester, the implementation team implemented a seamless communication process for participants involved in the intervention. Second, the implementation team remained committed and actively involved in each student's unique plan for progress, including both personal and academic well-being. Third, the Director of CAPS and the Director of CRW provided recommendations for changes and future interventions at the end of Fall 2015. These are outlined in the project charter for change (see Appendix A).

The implementation team followed the steps of the implementation plan created during the design phase. Prior to the start of the semester, both CAPS counselors and

personal trainers completed the Citi Training to complete basic human subjects research and were listed as additional investigators on the Institutional Review Board amendment, which received approval in July 2015 (see Appendix G). Then both the counselors and the trainers participated in a training regarding the intervention on Tuesday, August 10th, 2015 from 10:00 am until noon. Agendas for the trainings are available in Appendix H. The first hour of the training was a joint session to describe the intervention steps and to better explain the purpose of the intervention. During the first hour, we also did a mini-simulation of a personal training intervention for the CAPS counselors. The simulation aimed to allow for greater comfort and confidence between the trainers and counselors and to allow for better understanding of the purpose for the intervention. After the first hour, the groups split into two separate groups. The training agendas for the second hour of training are available in Appendix I. Once training was complete, the intervention was set to begin on the first day of classes for Fall 2015, August 16th.

Once the intervention began, students who entered CAPS found out about the intervention in one of the three ways described in the participant recruitment section. Since confidentiality is of large concern due to the Health Information Privacy and Portability Act (HIPPA), students who met the requirements for the intervention and had a desire to learn more by being referred to CRW had to sign a release of information with their CAPS counselor (see Appendix J). The students also completed the Personal Training Initial Consultation Form (see Appendix K) during their CAPS session so the counselor could ensure the students had a desire to participate for reasons of improving well-being. Counselors were to identify any red flags that may not have made the student a good candidate for the intervention, including but not limited to, signs of current or past

disordered eating or past over-exercise habits. The CAPS counselor referred the student to CRW by directly contacting the Director of CRW once both the referral form and initial consultation form were complete and the counselor determined the student to be a valid candidate for the intervention.

Once the student was referred, the Director of CRW picked up the initial consultation form and contact information for the student from CAPS and contacted the student to set up a time for an initial consultation. The first phase of the initial consultation was to discuss the intervention, including both the benefits and risks of participating, and to have the student determine whether they consented or did not consent to participate via the informed consent form (see Appendix L). If the student consented to participate, then the Director of CRW continued with the initial consultation. The next step involved the Director collecting a multitude of data from the student including a (1) program information and policy contract (see Appendix M), (2) health history (see Appendix N) (3) physical activity readiness via a PAR-Q form (See Appendix O) (4) physical activity profile and goals (see Appendix P), (5) patient health questionnaire to evaluate non-clinical level of depression via a PHQ-9 (see Appendix Q), and (6) a brief conversation about the next steps.

After the initial consultation, the Director identified the personal trainer that best fit the client's goals and desires. Trainers received medical information pertinent to training safety and effectiveness, as well as the physical activity profile and goals form from the Director of CRW. Trainers then contacted the student within two business days to set up the first training session. If the student was unable to be reached after two weeks, the trainer contacted the Director of CRW to have her follow up with the student.

Once the trainer connected with the students, the trainer completed a fitness assessment and two sessions with the student. Both the trainer and the student receiving the intervention had the ability to contact the Director of CRW or the corresponding counselor at any time throughout the process. It was really important to ensure everyone understood the student participant's best interest was of the highest concern at all times. After completion of all sessions, the personal trainer contacted the Director of CRW to follow up with a post-training consultation. The Director then contacted the student participant to set up an appointment to complete (1) post training PHQ-9 (see Appendix Q), (2) post training survey and evaluation (see Appendix R), and (3) informal post exercise consultation. The informal post exercise consultation was focused on next steps for the student with regard to maintaining an exercise regimen. If it was possible for the Director to support continued exercise participation, then the Director communicated that with the student. Finally, the Director then collected exercise participation data via swipes into the Campus Recreation Center for each participant pre-intervention and post-intervention. Next, I explain the data collection procedures in more detail.

Data Collection Procedures

Due to the highly confidential nature of the data and the federal regulations for healthcare information, as well as the safety of the participants, all participants chose a pseudonym for themselves to use in writings and presentations. Pseudonyms take the place of other names mentioned during the intervention process. All data remained in a locked cabinet in the Director of CRW's office for the duration of the intervention. The consent forms with identifiable information and the subject codes were located in a separate locked filing cabinet in the Director of CRW's office. Finally to ensure safety of

participants, the personal trainers, counselors, and student participants were encouraged to report anything that may have represented an elevated risk to the participant so the intervention would stop immediately. In that instance, the participants would have been notified via telephone and email of the increased risk and the IRB would have been notified via email within 24 hours of the finding. Next I discuss the data analysis procedures in more detail.

Data Analysis

Four phases comprised data analysis: instrument validation, quantitative data analysis, qualitative data analysis, and mixed methods data integration.

Instrument validation. The two primary instruments used to collect patient data were the Counseling Center Assessment of Psychological Symptoms (CCAPS) and the Patient Health Questionnaire 9 (PHQ-9). Both instruments are self-report instruments. All other instruments utilized to collect data for analysis only included qualitative or perceptual data. The instruments utilized to collect perceptual data were not utilized to determine improvement in depressive symptoms, but rather informed next steps and helped study the process of the intervention.

The PHQ-9 is a non-clinical depression screening tool produced by Pfizer Corporation to be utilized in non-clinical settings. Kroenke and Spitzer (2002) describe the PHQ-9 as an instrument that can both establish provisional diagnoses for depressive disorders and score the level of severity of depressive symptoms. The PHQ-9 has nine items that are each scored on a scale of 0 (“not at all”) to 3 (“nearly every day”). When using the PHQ-9 as a diagnostic measure, if an individual scores five or more of the nine questions as at least “more than half of the days” in the past two weeks then the

individual has a diagnosis of major depression. If two, three, or four of the questions are self-reported as at least "more than half the days" in the past two weeks, the individual receives a diagnosis of other depression. However, because the total PHQ-9 score for an individual ranges from 0-27, total scores of 5, 10, 15, and 20 correspond respectively with mild, moderate, moderately severe, and severe depression. If individuals mark any question above 0, there is one follow-up question at the end of the PHQ-9 to get a rating of functional impairment (Kroenke and Spitzer, 2002). The researchers evaluated the PHQ-9 instrument by utilizing cross-sectional data from two validation studies involving 6,000 patients in 8 primary care clinics and 7 obstetrics-gynecology clinics. The analysis revealed a Cronbach's Alpha of 0.86 in the obstetrics-gynecology clinics study and a Cronbach's alpha of 0.89 in the primary care study (Kroenke, Spitzer and Williams, 2001). Cronbach's alpha measures the internal consistency reliability by measuring if each of the questions measure the same thing (Warner, 2013). The scores above indicate external internal reliability of the PHQ-9. Kroenke, Spitzer, and Williams (2001) also reported excellent test-retest reliability of the PHQ-9, strong construct validity, and achievement of external validity.

The CCAPS instrument validation first assessed the 62-question initial survey, followed by the short version 34-question survey. Locke et al. (2011) conducted four studies to determine the CCAPS-62 structure, construct validity, and reliabilities. CCAPS-62 includes eight subscales, one of which is a depression subscale. The depression subscale scores were the only CCAPS used during the intervention analysis. Results indicated strong internal consistency with a Cronbach's alpha of 0.913 for the depression subscale (Lock et al., 2010). There was also evidence of test and re-test

reliability, subscale reliability, and external validity. The CCAPS-62 helped inform the construct of the shorter version, CCAPS-34 (Locke et al., 2012). Locke et al. (2012), analyzed the 34-question short survey, which includes a depression subscale as one of the seven subscales, by sampling 19,247 clients at 52 college counseling centers across the United States in fall 2008. Results indicate the CCAPS-34 has a Cronbach's alpha of 0.876 for the depression sub-scale with a marginal reliability of 0.882, showing evidence of reliability. Locke et al.'s (2012) study also showed evidence of convergent validity and acceptable test-retest reliability.

Both the PHQ-9 and the CCAPS-62 and CCAPS-34 were used to collect quantitative data, which are described in more detail in the next section.

Quantitative data analysis. In this intervention, I sought to understand the relationship between exercise and management of depressive symptoms. The improvement effort of reducing the prevalence of depression in college students through exercise was measured through three quantitative means. All statistical analyses were done utilizing the Statistical Package for the Social Sciences (SPSS). First, I utilized the PHQ-9 pre and post-intervention to determine non-clinical, self-reported levels of depression prior to and after the personal training exercise intervention. I report both the descriptive statistics, disaggregated by point in time, and the results of a paired-samples *t* test. Because I utilized a repeated measures design in this intervention, a paired samples *t* test was used in place of an independent sample t test (Warner, 2013). Warner (2013, p. 965) states that "the paired samples *t* test can be used to compare means for groups of scores that are obtained by making repeated measurements on the same group of participants whose behaviors are assessed at two times or in two trials." Since

differences can be computed in each item scored on the PHQ-9, the differences can be "interpreted as change from Time 1 to Time 2" (Warner, 2013, p. 965). The *t* test is a tool to understand the effect the exercise intervention has on depression levels utilizing the PHQ-9 results. Since the intervention operates in a clinical setting, the p-value used was 0.20 meaning there is only a 20% chance the difference in results is due to chance.

Next, I tracked exercise participation before and after the exercise intervention through swipes into the Campus Recreation Center (CRC). A paired samples *t* test was also used to determine if the exercise intervention impacted long term exercise participation. Although I sought to understand the relationship between exercise and depression reduction, the other positive wellness impact is the development of a lifelong coping mechanism. Once again, I used a p-value of 0.20, since the intervention was conducted in a clinical setting.

Finally, I analyzed the CCAPS data to also determine change over time in depression subscale scores. I report both descriptive statistics, again disaggregated by point in time, and the results of a paired-samples *t* test. I used the CCAPS depression subscale data to confirm the strength of the findings from the PHQ-9, creating data source triangulation. Triangulation is defined as cross-verifying the same findings by collecting and converging different data (Creswell, 2012). Triangulation of data can also occur when you combine multiple methods to collect data, including blending quantitative and qualitative research. In the next section I describe the qualitative data analysis process used in this intervention.

Qualitative data analysis. Qualitative data were collected during two consultation interviews with participants. Each consultation interview included a series of questionnaires and a subsequent conversation in which field notes were recorded. The initial consultations all followed a prescribed set of questions, with the ability of the researcher to probe or ask for more clarification when necessary. The follow-up consultation was less formal and included the completion of the second PHQ-9, completion of a post-training evaluation, and a conversation regarding next steps for a continuance of exercise participation.

Field notes and other qualitative data from the surveys were analyzed using In Vivo coding. Miles, Huberman, and Saldana (2014, p. 74) identify In Vivo coding as using "words or short phrases from the participant's own language in the data record as codes." The benefit of In Vivo coding is that it respects the participant's voice. In Vivo coding allows the researcher to look for repeated statements by participants to develop themes (Miles, Huberman, & Saldana, 2014). I used In Vivo coding because participant phrases are powerful in the area of behavioral research and improvement science. The coded data helped to identify themes, ultimately leading to future areas of consideration as well as successes and barriers within the intervention design.

Mixed methods data integration. Since I used an action research design that employs both quantitative and qualitative research, I integrated the data in the interpretation and evaluation phase. The *t* tests were used to describe the relationship between exercise, depression levels, and the establishment of a long-term coping mechanism. I used the qualitative data to help explain participant experiences and provide descriptive support to the trends identified quantitatively. The qualitative

analysis also provided detailed feedback to assist in the continuous process of improvement. Below is a detailed methodology chart.

Figure 4. Methodology Chart

Improvement Effort	Evidence of Improvement Collection Strategy	Frequency / Threshold for Intervention Modification	Analysis Strategy
Primary Goal: Reduce the prevalence of depressive symptoms in college students. Improvement Efforts – Personal Training, Exercise, Counseling	Patient Health Questionnaire 9 (PHQ-9)	Pre & Post Exercise Intervention	Descriptive Statistics Paired Samples T-Test
	One-on-One Consultation Meetings	Pre & Post Exercise Intervention	Transcription and In Vivo Coding
	Exercise Participation Tracking (Swipes into CRC)	Pre & Post Exercise Intervention	Paired Samples T-Test for Participation
	CCAPS-62 and CCAPS-34	Immediately prior to every CAPS session	Paired Samples T-Test

Figure 4. The methodology chart explains what strategies are used to measure improvement, when data collection occurs, and how the data are analyzed.

In addition to collecting participant data for program assessment, a post intervention survey was also administered to CAPS staff at the end of the Fall 2015 semester (see Appendix S).

Limitations of the Methodology

Limitations are defined as problems with the intervention or barriers in the intervention design that are identified by the researcher. Potential limitations of the intervention design include dropout rates, observational bias, and concerns regarding

sufficient statistical power to provide evidence of the significance of the intervention due to the clinical nature of the intervention. Additionally, although time frames for each individual to complete the intervention and the number of days post-intervention that the participant completed the follow-up consultation were similar across participants, they were not completely standardized due to individuals' schedules. This may result in unreliable data. Another reliability concern is all participants chose to meet with me in my office at the Campus Recreation Center for the consultations; because this was a new environment for most it may have elicited individual emotions that affected participant responses. To increase reliability, I utilized the same survey for all participants throughout the intervention and ensured internal reliability of surveys prior to administration. I was also the only person to meet with participants for the consultation process.

Validity limitations of the intervention include statistical conclusion validity, construct validity, internal validity and external validity. Statistical conclusion validity, defined as using statistics appropriately (Warner, 2013), is compromised in this study due to the small sample and the potential diverse group of participants. Confounding variables are threats to construct validity, which is defined as having measures that really measure what the researcher intends for it to measure and that it accurately predicts behaviors that it is designed to predict (Warner, 2013). For example, depression may be mistaken for anxiety or someone may display depression and anxiety rather than just depression. Threats to the internal validity of the intervention, meaning whether the variation in one variable is a factor contributing to the variation of another variable reflecting a causal relationship (Creswell, 2012), include the reliance on campus partners

for referrals and other impactful experiences the participants may have between pre and post-intervention surveys. Threats to external validity were not considered for this intervention since the primary intent was to address a problem at WCU, rather than to replicate the intervention results elsewhere.

Despite the limitations and potential reliability and validity issues, this intervention indicates a potential strategy for WCU to increase retention and improve the condition of students with depression. When addressing a small percentage of a population, impacting one person can have an impact on the community at large. Additionally, since the hope is to build lifelong coping skills, it is necessary to see if the intervention strategies have a lasting impact rather than an acute influence. The longitudinal nature of measuring such impact inevitably produces some limitations. In the next chapter I present the results of the intervention.

CHAPTER 4: RESULTS

In order to assess the improvement effort aimed at using exercise to help address depression at Western Carolina University, three main questions need to be addressed: 1) What are the barriers that prevent WCU students with depression from pursuing a regular exercise program? 2) Does an exercise intervention decrease the prevalence of depressive symptoms in WCU students with depression? 3) Does an exercise intervention assist in the development of regular exercise habits for WCU students with depression? I start by identifying the students who chose to participate in the intervention.

Participant Characteristics

Throughout the fall 2015 semester, 15 individuals who met the minimum intervention criteria of being 18 to 25 years old and having mild to moderate depression as determined by their counselor filled out the Authorization for Disclosure of Protected Health Information and were referred to Campus Recreation and Wellness for the intervention. Thirteen other students were also referred but did not meet the minimum criteria for participation in the intervention, so they participated in a secondary Exercise for Mental Health program. Of the 15 students referred, 13 completed the initial consultation with the Director of Campus Recreation and Wellness, one was scheduled for an initial consultation twice but no showed to both and then was unreachable, and one cancelled the initial consultation appointment noting no time to participate due to a family emergency. Of the 13 who completed the initial consultation, two never responded on multiple occasions to the assigned personal trainers to set up their first training appointment.

Out of the remaining 11 intervention participants, eight completed the initial consultation, fitness assessment, two training sessions, and the post consultation by the end of the intervention, November 30th, 2015. Of the three who did not complete all the phases by the end of the intervention, two were still in progress and planned to complete training; one started the referral process on November 11th and the other individual started on November 16th, so there was not enough time to complete training prior to the end of the intervention. The other student who was in progress cancelled an appointment for the second training session and then was unreachable.

Table 1 provides an overview of the characteristics of the eight students who completed the entire intervention.

Table 1

Characteristics of Intervention Participants

Characteristics		N	%
Gender	Male	3	37.5
	Female	5	62.5
Age	18 years old	0	0
	19 years old	1	12.5
	20 years old	4	50
	21-23 years old	0	0
	24 years old	1	12.5
	25 years old	2	25
Physical Activity Level	Sedentary	5	62.5
	Lightly Active	1	12.5
	Moderately Active	2	25
	Highly Active	0	0

Note. Age recorded is at the time of the initial consultation. Physical Activity Level is self-reported by participants and the following descriptions were provided to participants: Sedentary means little or no regular workouts, lightly active means sporadic workouts, moderately active is participating in workouts 2-3 days per week for 15-30 minutes, highly active is participating in workouts 3-5 days per week for 30-45 minutes.

All the results presented in subsequent sections include only the data collected from the eight participants who completed the intervention. Although there may be valuable information that comes from those who did not complete the intervention, the purpose of this intervention was to look at participants who fully participated in the exercise intervention. When referring to a particular participant's experience, each participant came up with a pseudonym. Pseudonyms are gender and age neutral so results are not separated by gender or age.

What are the Barriers Preventing WCU Students with Depression from Pursuing a Regular Exercise Program?

When participants were asked "What may be an obstacle for you in pursuing a regular exercise program?" during the initial consultation, every student mentioned two or three main obstacles. The number one cited obstacle was time, which was referred to by participants as "time" or "being busy", and was cited by five participants. The second most cited obstacle was lack of motivation, which was cited by three participants. Other obstacles cited, which include the number of participants denoting each obstacle, include lack of exercise knowledge (1), work schedule (1), trouble sleeping (1), lack of energy (1), lack of comfort in the Campus Recreation Center (2), past or current injury or ailment concerns (2), having technology as a barrier (1), and not having participated in sports or exercise in the past (2).

Participants were also asked to answer the question "how do you feel about exercise in general?" to help identify if feelings toward exercise were a barrier for participants. The question had several options as answers and participants were asked to circle all that applied. Answer options were as follows: Fun, relaxing, difficult, tolerate

it, motivating, love it, boring, challenging, stress relieving, hate it, and other with the option to write in a response. Responses by participants are presented in Table 2.

Table 2

Participant Feelings Toward Exercise

Feelings Toward Exercise	N	%
Boring	2	25
Challenging	3	37.5
Difficult	1	12.5
Fun	5	62.5
Hate It	0	0
Love It	0	0
Motivating	2	25
Relaxing	4	50
Stress Relieving	4	50
Tolerate It	1	12.5
"Other"	1	12.5

Note. The individual who circled "Other" wrote in the following response, "could be all depending on what I am doing". Also note that because individuals could circle multiple answers, each % only indicates what percent of 100 circled that response.

As shown in Table 2, 50% or more of all participants indicated they felt exercise was fun, relaxing, and stress relieving. No participants responded with "love it" or "hate it" when asked their feelings toward exercise.

Since responses to both questions that helped inform participation barriers were collected pre exercise participation, the responses helped inform the personal trainers about participant attitudes toward exercise. Next, I look at whether there is an indication that the exercise intervention helped decrease the prevalence of depressive symptoms in participants.

Does an Exercise Intervention Decrease the Prevalence of Depressive Symptoms in WCU Students with Depression?

The second question was whether the exercise intervention decreased the prevalence of depressive symptoms for participants. Three tools were used to assess the improvement effort: Counseling Center Assessment of Psychological Symptoms (CCAPS) results from three different points in the semester, PHQ-9 results pre and post exercise intervention, and participant self-report perceptional data on the post-training evaluation.

CCAPS results provided by CAPS. A paired samples t-test was performed to assess whether initial CCAPS depression subscale percentile scores differed significantly from exercise referral date CCAPS depression subscale percentile scores within the eight participants. Three of the participants were referred for the exercise intervention at their initial appointment, so their initial CCAPS was the same as the referral date CCAPS. Therefore, those three were not included in the paired samples t-test. The results of the paired samples t-test are shown in Table 3. A second paired samples t-test was performed to assess whether initial CCAPS depression subscale percentile scores differed significantly from end of semester CCAPS depression subscale percentile scores within the eight participants. Only one participant had not continued counseling and did not have an end of semester CCAPS score, so n=7. The results are also shown in Table 3. Since the improvement effort was implemented in a clinical setting, statistical significance is reported if $p < .20$, two-tailed.

Table 3

Results of Paired Samples T-Test for CCAPS Depression Scores

Variables	n	M	Std. Dev.	Std. Error M
CCAPS Initial	5	70.6	24.399	10.911
CCAPS Date of Referral	5	57.4	30.754	13.754
CCAPS Initial	7	72.14	20.227	7.645
CCAPS End of Semester	7	82.57	15.725	5.944

Variables	80% CI	t	p*
CCAPS Initial versus CCAPS Date of Referral	(4.059, 22.341)	4.009	0.016
CCAPS Initial versus CCAPS End of Semester	(-17.033, -3.824)	-2.273	0.063

*Two-Tailed

There was a significant difference between CCAPS initial depression subscale percentile scores (M= 70.6, S.D.= 24.399) and CCAPS date of referral depression subscale percentile scores (M=57.4, S.D.=30.754); $t(4) = 4.009$, $p = .016$, two-tailed. The 80% CI for the difference between sample means, M_1-M_2, had a lower bound of 4.059 and an upper bound of 22.341. This analysis suggests there is some impact on depressive symptoms between a participant's initial counseling session and a counseling session later in the semester when the student is actually referred for the exercise intervention.

There was a significant difference between CCAPS initial depression subscale percentile scores (M=72.14, S.D.=20.227) and CCAPS end of semester depression subscale percentile scores (M=82.57, S.D.=15.725); $t(6) = -2.273$, $p = .063$, two-tailed. The 80% CI for the difference between sample means, M_1-M_2, had a lower bound of -17.033 and an upper bound of -3.824. This analysis suggests there is a negative impact on depressive symptoms between the initial counseling session and a counseling session close to the end of the semester.

PHQ-9 results. Paired samples t-tests were also performed to assess whether there were within group differences in non-clinical depression screening scores pre and post exercise intervention. Scores were compared on corresponding individual questions pre and post exercise intervention, as well as total PHQ-9 scores for all eight participants. I also coded the follow-up functional impairment question on the PHQ-9 to assess within group difference pre and post exercise intervention. Coding is as follows: 1) Not difficult at all, 2) Somewhat difficult, 3) Very difficult, 4) Extremely difficult. Table 4 shows both the p-value and *t* ratio of the associated paired samples t-tests.

Table 4

Results of Paired Samples T-Test for PHQ-9 Pre and Post-Intervention Scores

Variables	t	p (Two-tailed)
PHQ1-1 versus PHQ2-1	2.049	.080*
PHQ1-2 versus PHQ2-2	1.323	.227
PHQ1-3 versus PHQ2-3	2.376	.049*
PHQ1-4 versus PHQ2-4	3.416	.011*
PHQ1-5 versus PHQ2-5	2.966	.021*
PHQ1-6 versus PHQ2-6	.882	.407
PHQ1-7 versus PHQ2-7	3.000	.020*
PHQ1-8 versus PHQ2-8	2.497	.041*
PHQ1-9 versus PHQ2-9	2.376	.049*
PHQ1Total versus PHQ2 Total	5.272	.001*
PHQ1-FI versus PHQ2-FI	1.000	.351

Note: PHQ1 stands for the pre-exercise intervention PHQ-9 completed by participants in the initial consultation. PHQ2 stands for the post-exercise intervention PHQ-9 completed by participants in the post consultation. PHQ1-1 refers to question one on the pre-exercise PHQ-9 and subsequent variables are labeled accordingly. FI = functional impairment, * indicates statistical significance at the $p < 0.20$ level.

There was a significant difference between several pre and post individual PHQ-9 scores on individual questions, including question 1) $t(7) = 2.049$, $p = .080$ two-tailed, question 3) $t(7) = 2.376$, $p = .049$ two-tailed, question 4) $t(7) = 3.416$, $p = .011$ two-tailed,

question 5) t(7) = 2.966, p =.021 two-tailed, question 7) t(7) = 3.000, p = .020 two-tailed, question 8) t(7) = 2.497, p = .041 two-tailed, and question 9) t(7) = 2.376, p = 0.049 two-tailed. Corresponding questions with reported significant differences read "over the last 2 weeks, how often have you been bothered by any of the following problems?; 1) "Little interest or pleasure in doing things", 3) "Trouble falling or staying asleep, or sleeping too much", 4) "Feeling tired or having little energy", 5) "Poor appetite or overeating", 7) "Trouble concentrating on things, such as reading the newspaper or watching television", 8) "Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual", and 9) "Thoughts that you would be better off dead or of hurting yourself in some way" (Kroenke, Spitzer and Williams, 2011).

No significant difference was found between pre and post exercise intervention scores on question 2) t(7) = 1.323, p = .227 two-tailed and question 6) t(7) = .882, p = .407 two-tailed. Question 2 asks for participants to report how often they have been bothered by "feeling down, depressed, or hopeless" over the last two weeks (Kroenke, Spitzer, and Williams, 2011). Question 6 asks for participants to report how often over the last two weeks they have been bothered by "feeling bad about yourself – or that you are a failure or have let yourself or your family down" (Kroenke, Spitzer, and Williams, 2011).

Results also indicate a significant difference in total PHQ-9 pre exercise intervention scores (M=14.88, S.D.=6.875) and the total PHQ-9 post exercise intervention scores (M=8.50, S.D.=4.957); t(7) = 5.272, p = .001, two-tailed. The 80% CI for the difference between sample means, M_1-M_2, had a lower bound of 4.664 and an

upper bound of 8.086. This analysis suggests the exercise intervention impacts non-clinical depression screening scores.

Finally, results indicate no significant difference in pre exercise intervention functional impairment levels (M=2.25, S.D.=.886) and post exercise intervention functional impairment levels (M=2.00, S.D.=0.926); $t(7) = 1.000$, $p = .351$, two-tailed. The 80% CI for the difference between sample means, M_1-M_2, had a lower bound of -.104 and an upper bound of .604. These results suggest that, despite improvements in self-reported non-clinical depression screening scores, there is no significant difference in self-reported functional impairment scores pre and post exercise intervention.

Participants' self-reported effectiveness data. Participants self-reported, on a post-training evaluation form, the effectiveness of personal training sessions in helping them to meet their goals. Participants were asked to circle a series of fitness and health specific goals in the initial consultation on the physical activity profile and goals (See Appendix P). Goals reported by participants are presented in Table 5.

Table 5

Self-Reported Specific Fitness and Health Goals by Participants

Name	Specific Fitness Goals	Specific Health Goals
Allison	Increase strength and endurance, improve cardio fitness, lose weight/body fat, exercise regularly, improve muscle tone, improve flexibility, injury rehabilitation, total body overall health	Reduce stress, increase energy/feel better, achieve balance in life, increase health awareness, improve productivity, improve nutritional habits, reduce disease risk
Ash	Lose weight/body fat, Improve balance/coordination, Improve core strength, Improve muscle tone	Increase health awareness, Improve nutritional habits, Improve overall wellness
Ashley	Increase strength and endurance, improve cardiovascular fitness, exercise regularly, improve flexibility	Increase energy/feel better, achieve balance in life, improve productivity
Clinton	Increase strength and endurance, lose weight/body fat, improve muscle tone, improve flexibility	Reduce stress, increase energy/feel better, achieve balance in life, improve productivity, improve nutritional habits, reduce back pain
Greg	Increase strength and endurance, improve cardio fitness, lose weight/body fat, exercise regularly	Reduce stress, Increase energy/feel better, achieve balance in life
Jarvis	Increase strength and endurance, improve cardio fitness, lose weight/body fat, exercise regularly, improve muscle mass, improve muscle tone, improve flexibility	Reduce stress, increase energy/feel better, achieve balance in life, increase health awareness, improve productivity
Tim	Increase strength and endurance, improve cardio fitness, lose weight/body fat, exercise regularly, improve balance/coordination, improve muscle mass, improve muscle tone, injury rehabilitation	Reduce stress, Increase energy/feel better, Achieve balance in life, improve productivity
Zoey	Increase strength and cardiovascular, improve cardiovascular fitness, lose weight/body fat, exercise regularly, improve balance/ coordination, improve muscle tone, improve flexibility	Reduce stress, Increase energy/feel better, achieve balance in life, increase health awareness, improve productivity, improve nutritional habits, reduce back pain, reduce disease risk

Of particular importance is six of the eight participants listed one of their personal fitness goals as “exercise regularly.” Since in the intervention I aimed to help students

establish a lifelong coping mechanism, it is important that individual goals also match the intended aim of the improvement effort. Additionally, six of the eight participants listed one of their personal health goals as "reduce stress." Once again, this indicates many individuals have goals that match the aim of the improvement effort.

On the post-training evaluation participants were asked to self-report, "How effective were your training sessions in helping you meet your goals?" A 5-point likert scale was used, with 5 being "very effective" and 1 being "completely ineffective". The mean score reported by the 8 participants was M=4.375, a score between "mostly effective" and "very effective", with a standard deviation of .51755. These descriptive statistics suggest participants felt personal training was effective in helping them reach their specific fitness and health goals, despite having some varying goals. Participants' qualitative responses explaining their self-reported score confirms the above suggestion, with qualitative statements as follows: "I was given the tools to meet my goals, as well as encouragement to meet my goals", "time is still an issue but I learned a lot and got answers to my questions", and "very helpful with getting me acquainted with the gym." Three participants indicated still needing more in various ways, including "still not comfortable doing it alone", "still nervous working out around others", and "as it was only two sessions I didn't get that in-depth".

Does an Exercise Intervention Assist in the Development of Regular Exercise Habits for WCU Students with Depression?

The final question to assess the improvement effort focuses on the development of exercise habits to assist students with developing a lifelong coping strategy. There are three ways the development of regular exercise habits were assessed post exercise

intervention: Self reported data on the post training evaluation form, documented field during the post consultation, and tracking changes in identification card swipes into the Campus Recreation Center.

Participants' self-reported post-intervention data. Participants' self-reported data on the development of exercise habits in two ways. First, on the post-training evaluation participants were asked to self-report, "How likely will you be to exercise regularly to help you with your mental health concerns?" A 5-point likert scale was used, with 5 being "very likely" and 1 being "completely unlikely". The mean score reported by the 8 participants was M=4.125, a score between "very likely" and "likely", with a standard deviation of .83452. These descriptive statistics suggest participants plan to continue an exercise regime after completion of the exercise intervention. Participants also wrote explanations for their rating on their likeliness to exercise regularly. Participant responses are shown in Table 6.

Table 6

Self-Reported Explanations for Likeliness to Continue Exercising by Participants

Name	Explanations
Allison	"I aim to try and exercise as it has proved helpful over the course of the sessions"
Ash	"I don't exercise for mental health - I do it for physical health."
Ashley	"I have a huge desire to, but whether or not I consistently do exercise is really dependent upon my busy schedule."
Clinton	"It's a great coping mechanism"
Greg	"I plan on continuing it because I feel better and have a strong goal now"
Jarvis	"I'll do my best to get in at least once a week hopefully twice"
Tim	"Still lack motivation and am lethargic, but at least I know what I can do"
Zoey	"This is a big goal of mine."

Participants were also asked in the post exercise consultation, "Is there anything I, as the Director of Campus Recreation and Wellness, can do to support your continued goal of exercising regularly?" Four of the eight participants decided they were going to continue on their own without the support of additional Campus Recreation and Wellness resources. Greg mentioned wanting to continue with the guidance of his trainer. He purchased two additional personal training sessions around September 15 and then purchased two more personal training sessions on September 24, all for a discounted rate of $4 per session. Clinton determined group exercise was the best way to continue with an exercise regimen, so Clinton was provided with a sticker for her University identification card for attendance at all available classes. Ash determined that getting back into running races was the best way for her to remain motivated, so she registered for the Valley of the Lilies Half Marathon and 5K at WCU for Spring 2016 at a discounted rate. Finally, Zoey mentioned wanting to continue with training because she likes the motivation of having someone there and she was not quite comfortable navigating the various machines on her own. However, she did not come in to pay for additional training sessions prior to the end of the semester.

Campus recreation center swipe data. Before analyzing university identification card swipe data, I removed swipes from the Fall 2015 data set that were not associated with entrances into the Campus Recreation Center (CRC) for the purpose of exercising. These included swipes at the scheduled times of participants initial and post-consultations. Additionally, one student completed an internship with CRW late in Fall 2015 so swipes for entrance into the CRC to complete scheduled internship hours were

also removed from the data set. Swipes for the scheduled personal training sessions were included in the data set since the purpose of the visits were to exercise.

A paired samples t-test was performed to assess whether the number of Fall 2014 CRC university identification card swipes differed significantly from the Fall 2015 CRC university identification card swipes. Since one student was not enrolled at WCU until Fall 2015, only seven participants were included in the analysis. A second paired samples t-test was performed to assess whether the number of Spring 2015 CRC University identification card swipes differed significantly from the Fall 2015 CRC University identification card swipes. Once again, only seven participants were included in the analysis. The results of the paired samples t-tests are shown in Table 7.

Table 7

Results of Paired Samples T-Tests for Card Swipe Semester Comparisons

Variables	n	M	Std. Dev.	Std. Error M
CRC Fall 2014 Swipes	7	3.00	4.899	1.852
CRC Fall 2015 Swipes	7	7.57	6.133	2.318
CRC Spring 2015 Swipes	7	3.86	8.071	3.051
CRC Fall 2015 Swipes	7	7.57	6.133	2.318

Variables	80% CI	t	p**
Fall 2014 Swipes versus Fall 2015 Swipes	(-7.679, -1.463)	-2.118	.079*
Spring 2015 Swipes versus Fall 2015 Swipes	(-6.914, -.515)	-1.671	.146*

Note: * indicates statistical significance at the $p < 0.20$ level. **Two-Tailed

There was a significant difference between the Fall 2014 CRC University identification card swipes (M= 3.00, S.D.= 4.899) and Fall 2015 CRC University identification card swipes (M=7.57, S.D.=6.133); t(6) = -2.118, p = .079, two-tailed. The 80% CI for the difference between sample means, M_1-M_2, had a lower bound of -7.679

and an upper bound of -1.463. There was also a significant difference between the Spring 2015 CRC University identification card swipes (M= 3.86, S.D.= 8.071) and Fall 2015 CRC University identification card swipes (M=7.57, S.D.=6.133); t(6) = -1.671, p = .146, two-tailed. The 80% CI for the difference between sample means, M_1-M_2, had a lower bound of -6.914 and an upper bound of -.515. This analysis suggests there is some change in behavior related to exercise participation from Fall 2014 semester to Fall 2015 semester and Spring 2015 semester to Fall 2015 semester for participants.

Improvement Effort Assessment by CAPS Staff

A post intervention survey (See Appendix S) was provided to CAPS staff to gain feedback on the improvement effort. Out of the ten CAPS staff respondents, six referred participants during Fall 2015. Of the six counselors who referred participants, three followed up with participants about their experience. The three counselors who followed up were asked to share any follow up comments that were beneficial to the intervention and the partnership between CAPS and CRW. Comments reported include "characterized as valuable experience," "requested simpler process for requesting services," and "clients reported that they felt comfortable and excited about getting their physical health back in control." One counselor offered a greater quantity of feedback, noting "several students volunteered satisfaction and praise for the quality of personalized fitness training they received, the responsiveness of the trainers and the overall encouragement they received" and students were "very pleased and impressed at the willingness of CRW staff to 'tune in' to those students who might be intimidated to go to a fitness center on their own."

CAPS staff were asked "In your opinion, should exercise continue to be offered as a supplemental treatment option for clients exhibiting depressive symptoms?", and seven out of seven respondents answered "yes." When asked why exercise should continue to be offered, a few responses included "to promote physical and mental health," "research demonstrates the effectiveness of exercise," and "I have had several clients who have reported that exercise has been a helpful means of coping with depressive symptoms."

CAPS staff also provided several open-ended comments providing feedback on how to enhance the partnership between CAPS and CRW in the future. Some suggestions were related to the general CAPS and CRW partnership with suggestions including "more joint programming," "more financial support from university," and building a "true Wellness department" that "allows for more direct outreach and awareness promotion around physical and sexual health issues." Some suggestions were directly related to the current intervention, including "mid-semester updates on the effectiveness of the coordination," "further follow-up of the program," "increased communication between CAPS and CRW staff," "automate the referral process," and "offer some 'exercise for mental health' workshops over here."

Summary

Overall, the results of the data analysis support exercise as an intervention for depression and assessment of the program supports the continuation of such programs at WCU. Although CCAPS depression subscale data did not fully indicate a change in depression levels from the initial contact by counseling to the end of the semester, pre and post PHQ-9 data supported participant improvement in depressive symptoms. Participant self-report survey data also supported personal training as a mechanism to

help participants reach health and fitness goals. The results of the data analysis also suggested the exercise intervention assisted in the development of exercise habits, as shown through a significant change in the number of University identification card swipes per participant when comparing previous semesters to the Fall 2015 semester. Participants also provided valuable qualitative data in support of a desire to establish exercise habits. In addition to participant data, data collected from the CAPS staff via a survey support continued partnership efforts including providing exercise as a supplemental treatment option for students experiencing depressive symptoms.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

The Jed Foundation (2014) Campus Program Framework for Success identifies nine factors to consider when developing a strategic approach to mental health on colleges campuses. The framework identifies exercise as one strategy to assist with the mental health of college students (The Jed Foundation, 2014). Research findings support the use of exercise as a practice to improve mental well-being (Deslandes et al., 2009; Gondoh et al., 2009; Kim et al., 2012), and furthermore exercise as a practice to improve depression (Elliot et al., 2012; Mailey et al., 2010; Taliaferro et al., 2011; Wipfli et al., 2009). The purpose of this improvement effort was to implement an exercise intervention for traditionally-aged college students with mild to moderate depression to reduce stress levels, ultimately resulting in a reduction of depressive symptoms. I sought to develop a program partnership between CAPS and CRW that could assist students with developing a lifelong coping mechanism, while building a more comprehensive campus effort to address increasing depression rates at WCU.

I begin this chapter with a discussion of findings from the improvement effort, which are also briefly presented in a poster presentation (See Appendix T). The discussion builds on the results, but the discussion is organized around the three questions the assessment of the intervention sought to address:

1. What are the barriers that prevent WCU students with depression from pursuing a regular exercise program?
2. Does an exercise intervention decrease the prevalence of depressive symptoms in WCU students with depression?

3. Does an exercise intervention assist in the development of regular exercise habits for WCU students with depression?

Following the discussion of findings, I present the strengths and limitations of the improvement effort. I then conclude the chapter with implications and recommendations for future policy and practice.

Discussion of Findings

What are the barriers that prevent WCU students with depression from pursuing a regular exercise program? In this intervention, I described barriers students with depression face when pursuing a regular exercise program. The most universally described barrier was time, with participating students identifying various time consumers including academic classes, other school-related activities, work commitments, and having a dependent at home. This finding considered in the context of Lester's (2014) finding that academic concerns and pressure to succeed academically are stressors in college, created a cyclical pattern discouraging mental well-being. Academic stress can be a source of depression, but also creates a time barrier to receive adequate help. For many students time was cited along with other barriers. Lack of motivation was mentioned by a few participants as a barrier. One participant even described the reason for lack of motivation as being lethargic and having no energy. Finally, one major barrier for CRW to continue to combat was the mention of lack of comfort with the gym or Campus Recreation Center (CRC). This suggests CRW should look for alternative ways to bring people in to get them comfortable in the CRC, as well as reach out to provide exercise options external to the CRC.

Does an exercise intervention decrease the prevalence of depressive symptoms in WCU students with depression? This improvement effort sought to decrease the prevalence of depressive symptoms in students with depression. Although CCAPS depression subscale data did not support the decrease in depressive symptoms from participants' initial counseling consultations to end of semester counseling consultations, PHQ-9 data did support the decrease in depressive symptoms from pre exercise intervention to post exercise intervention. The CCAPS depression subscale data did support the decrease in depressive symptoms from participants' initial counseling consultation to the counseling consultation date of referral for an exercise intervention. This finding indicates support for counseling as a sole treatment strategy, but does not support counseling in combination with an exercise intervention. However, there may be additional external factors affecting the change in CCAPS depression subscale data since CCAPS assessments are taken over time. For example, the onset of exams may impact a student's CCAPS depression subscale score at the end of the semester because exams may be a stressor. Since the PHQ-9 data did support the decrease in depressive symptoms from pre exercise intervention to post exercise intervention and participant self-report responses on a post training evaluation supported positive experiences and an overall desire to continue desire by participants to incorporate exercise into their lifestyles, there does seem to be an opportunity to continue and enhance the intervention. Continuation with the improvement strategy is supported by positive findings in previous literature regarding exercise having positive effects for individuals experiencing depressive symptoms (Elliot et al., 2012; Mailey et al., 2010; Taliaferro et al., 2011; Wipfli et al., 2009)

Does an exercise intervention assist in the development of regular exercise habits for WCU students with depression? This improvement effort focused on developing long-term exercise habits rather than acute solutions for students with depression. Participants indicated a desire to continue utilizing exercise for depression on a long-term basis, citing reasons such as exercise proved helpful during the intervention, exercise is good for coping, and continuing exercise for physical health. However, one participant's response focused on desire and whether the huge desire to continue will actually match up with consistently continuing to exercise. Tracking University identification card swipes and analyzing the data supported the notion that students exercised in the CRC more during Fall 2015 than in Spring 2015 or Fall 2014. However, there is no direct indication that it is a result of the exercise intervention. Therefore, it is difficult to assert the change in behavior was due to the exercise intervention. However, continued tracking over time may assist in determining if the exercise intervention indeed played a part in the changed behavior.

Strengths and Limitations of the Improvement Effort

Strengths of the improvement effort include:

1. This intervention filled a gap in WCU's approach to addressing depression by building a more comprehensive approach to treatment options for students. In doing so, it allowed students to have greater choice in how best to approach their personal well-being.
2. The improvement effort provided students access to an economical coping strategy by providing the opportunity for them to build knowledge and greater comfort with exercise through free personal training. In doing so, students

could transition to a personal exercise program more easily and utilize the Campus Recreation Center, which is a service already included in student fees at WCU.

3. The use of a practical action research design provided for valuable pre and post quantitative participation data, while allowing for a greater explanation of the student experience through qualitative data. As a result, the findings provide considerable insight for future improvement efforts.
4. The intervention also provided close student contact, which allowed for students to receive support on multiple levels and to build relationships in multiple areas across campus. Additionally, the relationships included both University staff and peers.
5. Throughout implementation of the intervention, the same protocols were utilized for every participant. Training for CAPS staff aimed to ensure purposeful referrals centered on meeting specific mental health and demographic criterion. A single point of contact for initial and post consultations at CRW provided students with consistent delivery of surveys and information.
6. The exercise intervention was specific to individual client needs and desires, allowing the personal trainers some flexibility to create a personalized experience and to create experiences that the trainers felt would be most fun and motivating for participants.

Despite several strengths to the intervention, there were also some limitations. Limitations of the improvement effort include:

1. Despite the improvement effort allowing for continued communication regarding participants between CRW and CAPS, in most situations communication ended with the referral. The only additional communication between the two departments occurred when two students failed to respond after the initial consultation with CRW and when communication went out regarding the CAPS assessment survey. There was also one formal meeting between the Director of CRW and the Director of CAPS toward the end of the intervention time frame.
2. Since the intervention was limited to individuals with very specific mental health and demographic criteria, the sample size was small and may not be completely reflective of the greater WCU student population that is experiencing depressive symptoms.
3. Although the exercise intervention was intended to be specific to individual client needs and desires, in doing so the individual experience varied a lot per participant. Additionally some participants may have had a more natural connection with their personal trainer, providing for a more enhanced experience. The individual participant's feelings toward the exercise program or other persons involved may have skewed the results of their post training PHQ-9 by providing the participant with a time-limited inflation of personal feelings.
4. Despite being contacted the day after their final training session to set up a post training consultation to complete the post training evaluation and second PHQ-9, some participants took longer to respond or their availability to meet

was further off than other participants. This meant that every post training consultation did not fall the same number of days away from the completion of training, once again potentially impacting student ratings on the post training PHQ-9.

5. Finally, it was difficult to assess pre and post exercise participation data to determine if there was a change in exercise habits after the exercise intervention. The difficulty ensued because participants all started at different points in the semester, making it impossible to compare pre and post data in the same semester. For example, a student who participated from the start of fall semester would have no pre data. In order to truly provide useful comparison data, equivalent time frames were used. Unfortunately, this meant comparing the entire Fall 2015 semester to previous semesters despite some participants not starting the intervention until well into the Fall 2015 semester. This may have underinflated or overinflated the results of the data measuring change in exercise habits. Additionally, there is the consideration that some students may exercise external to the CRC.

Implications and Recommendations for Policy and Practice

Prior research does not provide assessment of an improvement effort focused on a collaborative partnership between university departments that supplements counseling with exercise. Although the improvement effort at WCU may help to inform practices at other universities, every university still has a unique subset of students with varying needs. It is for that purpose that my focus for implications of the improvement effort and recommendations for future practice remain focused on efforts at WCU. First I discuss

policy implications and recommendations of the improvement effort at WCU followed by recommendations for practice.

Policy implications and recommendations at WCU. Despite the fact that this intervention was focused on improvement of depressive symptoms in students through programmatic means, it also helped me to identify two institutional policy implications. WCU currently has two main ways a student can receive mental health assistance from counseling; A student can self-identify as needing and wanting help or a student can get identified by a faculty or staff member through reporting to the Student Crisis Response Team (SCRT). The SCRT helps identify mental health or other well-being issues early to provide interventions to students to help them make positive choices and exhibit lifestyle behaviors that will impact their success as a student. However, following through with receiving help is still up to the student and there are still several students who never self-identify or are not identified by faculty and staff on campus. Therefore, I recommend two policy options for consideration by WCU to be more proactive in getting students help early. The policy options are presented in a policy brief (See Appendix U) and are also stated below:

1. The first recommendation is the implementation of optional early mental health screening. Under the optional early mental health screening policy, students have the option of taking a mental health assessment upon arrival to WCU. The screening results would then be used as a self awareness tool for students and to inform students of resources available to them during their time at WCU. Resources available would be specific to individual students' results. The main benefit of optional early mental health screening is bringing

self awareness to students regarding their mental health. One concern regarding this policy option is the invasion of student privacy. It is important for WCU to consider the details of implementation, such as whether anyone on campus has access to the results or if they are only to inform the student.

2. The second policy recommendation is to provide optional faculty and staff training on identification of behavioral difficulties to assist faculty and staff in utilizing the Student Concern reporting mechanism. This training could be a one time, online training to assist in teaching faculty and staff what behaviors to look for to identify a student in distress. The main benefits are the training is available at the convenience of each faculty and staff member and is a low cost option. Additionally, the training can be promoted during mandatory campus safety training for faculty and staff so every faculty and staff member is made aware of the optional training. The main disadvantage is the interpretation of the information that is presented in an online context.

Recommendations for practice at WCU. Assessment of the improvement effort at WCU supports recommendations for future programmatic efforts at WCU with some modifications. Three primary practice recommendations are made to improve upon existing practices.

1. The first practice recommendation is to continue the CRW and CAPS partnership, but focus the partnership on improving overall mental health instead of just depressive symptoms. This allows more students with a variety of mental health concerns that may benefit from an exercise intervention to participate in the program. Additionally, I recommend to develop a tiered system of participation

so students can select their level of engagement and type of engagement with exercise. For example, students may select the current program set-up of receiving two personal training sessions or they may select a package containing a greater number of training sessions. It is also recommended to have students pay a nominal fee for the services to ensure commitment and attendance.

2. In addition to the personal training exercise option, I recommend starting a group through CAPS for students with depression that combines a group counseling element with an exercise component. Creating a group element may assist individuals with accountability. It also provides students with another opportunity to engage in exercise as an intervention. CRW could provide a personal trainer or professional staff member who could facilitate the exercise portion.
3. The third practice recommendation is to expand and build a new partnership between CRW and Health Services (HS). The focus of the effort is to create a proactive healthcare approach routed in student choice aimed at students not currently engaged in an exercise regimen. If a student is engaged at HS and the HS provider identifies the student as one with a healthcare symptom or condition that may benefit from participation in exercise, the HS provider can recommend the student reach out to CRW. Additionally, students who are engaged at HS may pick up a brochure (See Appendix V) and self-identify as someone who may benefit from participation in exercise. If the student reaches out to CRW, they could receive knowledge about the benefits or exercise and how to use the available machines via an equipment orientation and consultation session with a

personal trainer. Continuing to expand WCU's approach to well-being supports student success.

Conclusion

College students face several challenges that can impact their mental health. As students recognize the need to develop coping strategies to deal with life's stressors, college campuses need to have programs set up to help them succeed both in and out of the classroom. Participants in this improvement effort were proactive in utilizing available college resources by personally scheduling and attending counseling, and then consenting to participate in an exercise intervention. Assessment of participant's self-reported data provides individual accounts for the support of exercise as an intervention and truly speaks to the student experience.

With this improvement effort, I sought to develop a program partnership between CAPS and CRW that could assist students with developing a lifelong coping mechanism, while building a more comprehensive campus effort to address increasing depression rates at WCU. The data support a continued and evolving partnership between CRW and CAPS, including expanding the effort to include multiple mental health diagnoses for a personal training intervention and creating a group for students with depression that includes both counseling and exercise. The results of this improvement effort also provide encouragement for expanding collaborative efforts into a proactive healthcare model, building upon the current CRW and CAPS partnership by adding a secondary CRW and Health Services partnership that focuses on addressing long-term healthcare concerns with exercise. WCU students can benefit from a more proactive and comprehensive approach to well-being, and it is up to the University to build a more

comprehensive approach to better support student success.

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APPENDIX A: CHARTER FOR CHANGE

Project Name: Addressing Depression in Western Carolina University Students: The Role of Exercise

Start Date: August 2015 **End Date:** December 2015

What Are We Trying To Accomplish?

General Description

Implement an exercise intervention for traditionally-aged undergraduate students with mild to moderate depression to reduce stress levels, ultimately resulting in a reduction of depressive symptoms.

Student Impact

Students will experience a decrease in stress levels resulting in a decrease of depressive symptoms.

Improvement Objectives

- Decrease the prevalence of depressive symptoms in students with depression.
- Increase the average number of visits per semester to the Campus Recreation Center by students with depression.

Estimated WCU Impact

- WCU will impact the retention of students with depression by teaching them a lifelong coping mechanism.
- WCU will see a decrease in the average number of counseling sessions by students with depression who are also engaged in an exercise program, ultimately decreasing the workload of the Counseling and Psychological Services Staff. This will only occur after the program becomes well established, which may take several years.

What Changes Can We Make That Will Result In Improvement?

- Educate CAPS staff about the benefits of exercise
- Provide Personal Trainers with specific training regarding depression
- Develop a continuum of care model that spans between Counseling and Psychological Services to Campus Recreation & Wellness
- Provide monetary support that aids students in receiving proper exercise education

PDSA Cycles

PDSA No.	Objective of Initial Cycles
1	Validate baseline data – Acquired from pilot study and from meeting with the improvement team
2	Promote and implement exercise interventions for students with depression who are referred from CAPS
3	Implement individual successors post-training to promote student success and evaluate self-motivation to continue exercise

The Improvement Team

Director, Counseling and Psychological Services
Director, Campus Recreation & Wellness
Counseling and Psychological Services staff
Assistant Director for Fitness and Wellness
Personal Trainers, who are student workers for Campus Recreation & Wellness

Review Schedule

Review program information on a semester basis
Evaluate student outcomes on a semester basis
Evaluate the process of referral on a semester basis
Meet as an improvement team once annually

How Will We Know a Change is an Improvement?

Objective	Measure	Goals
Decrease the prevalence of depressive symptoms in students with depression	Utilize the Patient Health Questionnaire 9 (PHQ-9) to do pre and post-intervention data collection on depressive symptoms	Decrease student scores on the PHQ-9 by a difference of 2
Increase the average number of visits per semester to the Campus Recreation Center by students with depression	Compare student visits to the Campus Recreation Center, via CatCard swipe data, before and after the exercise intervention	Increase student visits by 25% after the exercise intervention

APPENDIX B: CCAPS-62 ASSESSMENT

Counseling Center Assessment of Psychological Symptoms — CCAPS-62

Name: _____ **Date:** _____

INSTRUCTIONS: The following statements describe thoughts, feelings, and experiences that people may have. Please indicate how well each statement describes you, **during the past two weeks**, from "not at all like me" (0) to "extremely like me" (4), by marking the correct number. Read each statement carefully, select only one answer per statement, and please do not skip any questions.

	Not at all like me				Extremely like me
1. I get sad or angry when I think of my family	0	1	2	3	4
2. I am shy around others	0	1	2	3	4
3. There are many things I am afraid of	0	1	2	3	4
4. My heart races for no good reason	0	1	2	3	4
5. I feel out of control when I eat	0	1	2	3	4
6. I enjoy my classes	0	1	2	3	4
7. I feel that my family loves me	0	1	2	3	4
8. I feel disconnected from myself	0	1	2	3	4
9. I don't enjoy being around people as much as I used to	0	1	2	3	4
10. I feel isolated and alone	0	1	2	3	4
11. My family gets on my nerves	0	1	2	3	4
12. I lose touch with reality	0	1	2	3	4
13. I think about food more than I would like to	0	1	2	3	4
14. I am anxious that I might have a panic attack while in public	0	1	2	3	4
15. I feel confident that I can succeed academically	0	1	2	3	4
16. I become anxious when I have to speak in front of audiences	0	1	2	3	4
17. I have sleep difficulties	0	1	2	3	4
18. My thoughts are racing	0	1	2	3	4
19. I am satisfied with my body shape	0	1	2	3	4
20. I feel worthless	0	1	2	3	4
21. My family is basically a happy one	0	1	2	3	4
22. I am dissatisfied with my weight	0	1	2	3	4
23. I feel helpless	0	1	2	3	4
24. I use drugs more than I should	0	1	2	3	4
25. I eat too much	0	1	2	3	4
26. I drink alcohol frequently	0	1	2	3	4
27. I have spells of terror or panic	0	1	2	3	4
28. I am enthusiastic about life	0	1	2	3	4
29. When I drink alcohol I can't remember what happened	0	1	2	3	4
30. I feel tense	0	1	2	3	4
31. When I start eating I can't stop	0	1	2	3	4
32. I have difficulty controlling my temper	0	1	2	3	4
33. I am easily frightened or startled	0	1	2	3	4

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http://ccmh.psu.edu
ccmh@psu.edu
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Counseling Center Assessment of Psychological Symptoms — **CCAPS-62**

	Not at all like me				Extremel like me
34. I diet frequently	0	1	2	3	4
35. I make friends easily	0	1	2	3	4
36. I sometimes feel like breaking or smashing things	0	1	2	3	4
37. I have unwanted thoughts I can't control	0	1	2	3	4
38. There is a history of abuse in my family	0	1	2	3	4
39. I experience nightmares or flashbacks	0	1	2	3	4
40. I feel sad all the time	0	1	2	3	4
41. I am concerned that other people do not like me	0	1	2	3	4
42. I wish my family got along better	0	1	2	3	4
43. I get angry easily	0	1	2	3	4
44. I feel uncomfortable around people I don't know	0	1	2	3	4
45. I feel irritable	0	1	2	3	4
46. I have thoughts of ending my life	0	1	2	3	4
47. I feel self conscious around others	0	1	2	3	4
48. I purge to control my weight	0	1	2	3	4
49. I drink more than I should	0	1	2	3	4
50. I enjoy getting drunk	0	1	2	3	4
51. I am not able to concentrate as well as usual	0	1	2	3	4
52. I am afraid I may lose control and act violently	0	1	2	3	4
53. It's hard to stay motivated for my classes	0	1	2	3	4
54. I feel comfortable around other people	0	1	2	3	4
55. I like myself	0	1	2	3	4
56. I have done something I have regretted because of drinking	0	1	2	3	4
57. I frequently get into arguments	0	1	2	3	4
58. I find that I cry frequently	0	1	2	3	4
59. I am unable to keep up with my schoolwork	0	1	2	3	4
60. I have thoughts of hurting others	0	1	2	3	4
61. The less I eat, the better I feel about myself	0	1	2	3	4
62. I feel that I have no one who understands me	0	1	2	3	4

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ccmh@psu.edu
814-865-1419

APPENDIX C: CCAPS-34 ASSESSMENT

CCAPS-34

Name: _____ **Date:** _____

INSTRUCTIONS: The following statements describe thoughts, feelings, and experiences that peopl may have. Please indicate how well each statement describes you, during the past two weeks, from "not at all like me" (0) to "extremely like me" (4), by marking the correct number. Read each statement carefully, select only one answer per statement, and please do not skip any questions.

		Not at all like me				Extre like
1.	I am shy around others	0	1	2	3	4
2.	My heart races for no good reason	0	1	2	3	4
3.	I feel out of control when I eat	0	1	2	3	4
4.	I don't enjoy being around people as much as I used to	0	1	2	3	4
5.	I feel isolated and alone	0	1	2	3	4
6.	I think about food more than I would like to	0	1	2	3	4
7.	I am anxious that I might have a panic attack while in public	0	1	2	3	4
8.	I feel confident that I can succeed academically	0	1	2	3	4
9.	I have sleep difficulties	0	1	2	3	4
10.	My thoughts are racing	0	1	2	3	4
11.	I feel worthless	0	1	2	3	4
12.	I feel helpless	0	1	2	3	4
13.	I eat too much	0	1	2	3	4
14.	I drink alcohol frequently	0	1	2	3	4
15.	I have spells of terror or panic	0	1	2	3	4
16.	When I drink alcohol I can't remember what happened	0	1	2	3	4
17.	I feel tense	0	1	2	3	4
18.	I have difficulty controlling my temper	0	1	2	3	4
19.	I make friends easily	0	1	2	3	4
20.	I sometimes feel like breaking or smashing things	0	1	2	3	4
21.	I feel sad all the time	0	1	2	3	4
22.	I am concerned that other people do not like me	0	1	2	3	4
23.	I get angry easily	0	1	2	3	4
24.	I feel uncomfortable around people I don't know	0	1	2	3	4
25.	I have thoughts of ending my life	0	1	2	3	4
26.	I feel self conscious around others	0	1	2	3	4
27.	I drink more than I should	0	1	2	3	4
28.	I am not able to concentrate as well as usual	0	1	2	3	4
29.	I am afraid I may lose control and act violently	0	1	2	3	4
30.	It's hard to stay motivated for my classes	0	1	2	3	4
31.	I have done something I have regretted because of drinking	0	1	2	3	4
32.	I frequently get into arguments	0	1	2	3	4
33.	I am unable to keep up with my schoolwork	0	1	2	3	4
34.	I have thoughts of hurting others	0	1	2	3	4

APPENDIX D: EXERCISE FOR DEPRESSION BROCHURE

Exercise for Depression

Campus Recreation & Wellness (CRW) is partnering with Counseling and Psychological Services (CAPS) to research how exercise may help your mental health by providing qualified study participants with free personal training. The principal investigator proposes that supplementing counseling with an exercise intervention will teach students a lifelong coping mechanism to help them deal with stress during and after college. Read on to determine if you fit the criteria and to help determine if this study may be of interest to you.

Who is Eligible?

Counseling and Psychological Services (CAPS) must identify any student wishing to participate as living with mild to moderate depression, as well as identify the student as someone who may benefit from an exercise intervention. The student must consent to participate in the study and be referred from CAPS to CRW. The student must also be 18-25 years of age. Speak with your counselor to determine if you meet the eligibility criteria.

How does exercise help with depression?

Regular exercise can help ease depression by producing the following effects.

- Releases feel-good brain chemicals, such as endorphins and neurotransmitters
- Reduces immune system chemicals
- Reduces stress
- Aids in social interactions
- Aids in confidence gains
- Increases body temperature

What are the benefits of exercise overall?

There are several benefits of exercise. The most noted benefits are as follows.

- Increases longevity
- Improves mood and fights depression
- Reduces stress
- Strengthens Bones and increases flexibility
- Improves daily functions
- Aids in better sleep
- Aids in weight management
- Improves self image
- Reduces aches and pains
- Reduces the risk of injury
- Reduces the risk of cardiovascular and other chronic diseases

What are the benefits of participating in this study?

The main benefit of participation is for you to take an active role in your personal healthcare. Additionally, participation may result in the development of a long-term coping mechanism. Finally, study participants will receive two high-quality, free personal training sessions to get them started on an exercise regimen by nationally certified personal trainers. The first session is a fitness assessment and consultation. The second session is a training session designed to get you oriented to workout on your own.

What are the risks of participating in this study?

There are minimal physical and psychological risks associated with participation in this study. There is a small risk that someone may develop injuries from participation in exercise, which we minimize by ensuring study participants are in a highly monitored exercise environment. Additionally, there is a small risk of added psychological distress because exercise may increase anxiety associated with body image issues, environmental factors, or the stress of having another appointment. Training will be stopped immediately if there is any indication of added psychological distress.

What if I am uncomfortable working out in the Campus Recreation Center?

CRW wants you to feel comfortable and will do everything to ensure you have a positive experience. We understand the Campus Recreation Center is not an environment everyone feels comfortable in and welcome taking personal training sessions to other locations on campus if that best suits the student.

What if I do not have experience working out?

The nationally certified personal trainers are going to assess your current fitness level before setting you up with a fitness regime, so no experience is necessary. However, we do want to ensure you are in good health to participate in an exercise regimen so we have safeguards in place like health history forms for participants to fill out in advance of participation.

How do I learn more about the study?

If you are interested in participating in this study or knowing how exercise may benefit you, please speak with your counselor. They can help you determine if it may be the right fit for you given your current state and your goals. Your counselor can also get you in touch with the principal investigator to answer any questions you may have regarding participation.

APPENDIX E: EXERCISE FOR MENTAL HEALTH BROCHURE

Exercise for Mental Health

Campus Recreation & Wellness (CRW) is partnering with Counseling and Psychological Services (CAPS) to help you better understand and experience how exercise may help your mental health. CAPS clients have the opportunity to recieve two personal training sessions by a nationally certified trainer for only eight dollars through our CAPS referral process. The premise is that supplementing counseling with an exercise intervention will teach students a lifelong coping mechanism to help them deal with stress during and after college.

Who is Eligible?

Counseling and Psychological Services (CAPS) must identify any student wishing to participate as someone who may benefit from an exercise intervention. The student must consent to participate and be referred from CAPS to CRW. Speak with your counselor if you are interested in seeing if you fit the criteria.

How does exercise help with mental health?

Regular exercise can help ease depression by producing the following effects.

- Releases feel-good brain chemicals, such as endorphins and neurotransmitters
- Reduces immune system chemicals
- Reduces stress
- Aids in social interactions
- Aids in confidence gains
- Increases body temperature

What are the benefits of exercise overall?

There are several benefits of exercise. The most noted benefits are as follows.

- Increases longevity
- Improves mood and fights depression
- Reduces stress
- Strengthens Bones and increases flexibility
- Improves daily functions
- Aids in better sleep
- Aids in weight management
- Improves self image
- Reduces aches and pains
- Reduces the risk of injury
- Reduces the risk of cardiovascular and other chronic diseases

What are the benefits of participating in an exercise intervention?

The main benefit of participation is for you to take an active role in your personal healthcare. Additionally, participation may result in the development of a long-term coping mechanism. Finally, participants receive two high-quality personal training sessions for only eight dollars to get them started on an exercise regimen by nationally certified personal trainers. The first session is a fitness assessment and consultation. The second session is a training session designed to get you oriented to workout on your own.

What are the risks of participating in an exercise intervention?

There are minimal physical and psychological risks associated with participation. There is a small risk that someone may develop injuries from participation in exercise, which we minimize by ensuring study participants are in a highly monitored exercise environment. Additionally, there is a small risk of added psychological distress because exercise may increase anxiety associated with body image issues, environmental factors, or the stress of having another appointment. Training will be stopped immediately if there is any indication of added psychological distress.

What if I am uncomfortable working out in the Campus Recreation Center?

CRW wants you to feel comfortable and will do everything to ensure you have a positive experience. We understand the Campus Recreation Center is not an environment everyone feels comfortable in and welcome taking personal training sessions to other locations on campus if that best suits the student.

What if I do not have experience working out?

The nationally certified personal trainers are going to assess your current fitness level before setting you up with a fitness regimen, so no experience is necessary. However, we do want to ensure you are in good health to participate in an exercise regimen so we have safeguards in place like health history forms for participants to fill out in advance of participation.

How do I learn more about participation and the referral process?

If you are interested in participating or knowing how exercise may benefit you, please speak with your counselor. They can help you determine if it may be the right fit for you given your current state and your goals. Your counselor can also get you in touch with CRW to answer any questions you may have regarding personal training.

APPENDIX F: INSTITUTIONAL REVIEW BOARD APPROVAL

Western Carolina University
Institutional Review Board
c/o Office of Research Administration
110 Camp Building
Cullowhee NC 28723
irb@wcu.edu | 828-227-7212

IRB number: 2015-0126 Date of review: March 19, 2015

Investigators: Shauna Sleight and Dr. Kofi Lomotey
Project Title: Addressing depression in college students: Using exercise at WCU

Your IRB protocol has been approved, effective with today's date, under the following category of expedited review, as authorized by 45 CFR 46.110 and 21 CFR 56.110:

- ☐ Clinical studies of drugs and medical devices (a) when an investigational new drug application (21 CFR Part 312) is not required or (b) medical devices for which (i) an investigational device exemptio application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling
- ☐ Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture
- ☐ Prospective collection of biological specimens for research purposes by noninvasive means
- ☐ Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves
- ☐ Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis)
- ☐ Collection of data from voice, video, digital, or image recordings made for research purposes
- ☒ Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies
- ☐ Continuing review of research previously approved by the convened IRB

Your protocol is approved for one year and may be renewed annually. If you wish to make changes to your protocol, including recruitment procedures, sampling, consent, interventions, data collection methods, and investigators, please use the amendment request located on the IRB website to submit your request in advance.

This approval does not cover research conducted prior to the approval date. Please remember that you are responsible for reporting adverse events or unanticipated risks to the IRB immediately.
IRB representative:

Date: March 19, 2015

APPENDIX G: INSTITUTIONAL REVIEW BOARD AMENDMENT APPROVAL

IRB number: A2015-0126 Date of review: July 31, 2015

Principal Investigator: Shauna Sleight, Kofi Lomotey

Project Title: Addressing Depression in College Students: Using Exercise at Western Carolina Universit

Western Carolina University
Institutional Review Board
c/o Office of Research Administration
110 Camp Building
Cullowhee NC 28723
irb@wcu.edu | 828-227-7212

Your IRB protocol amendment request has been approved, effective with today's date.

This amendment approval does not change the existing expiration date of the protocol.

If you wish to make additional changes to your protocol, including recruitment procedures, sar consent, interventions, or data collection methods, please use the amendment request locate IRB website (http://www.wcu.edu/6801.asp) to submit your request in advance.

This approval does not cover research conducted prior to the approval date. Please remember are responsible for reporting adverse events or unanticipated risks to the IRB immediately.

Best wishes for the success of your study.
IRB representative:

Date: 08/20/12
Thomas E. Ford
IRB Chair, Western Carolina University

APPENDIX H: CAPS AND CRW COMBINED TRAINING AGENDA

Trainers: Shauna Sleight, Director of Campus Recreation and Wellness
Kim Gorman, Director Counseling and Psychological Services
Trainees: Three student personal trainers and the CAPS Counselors/Psychologists
Date/Time of Training: Tuesday, August 11, 2015, 10:00am-11:00am
Location of Training: Bird Building

Items to Cover During Training:

I. Basic Information Session
    a. Tour of CAPS space with Personal Trainers
    b. Program Improvement Intervention Information
        i. What is the problem?
        ii. Why is this a problem?
        iii. What is CAPS and CRW doing to improve our current services?
        iv. How will this program improvement potentially evolve in the future?
    c. How does the referral process work from CAPS to CRW?
    d. Confidentiality
        i. What forms need to get signed by the participant?
        ii. How do we ensure confidentiality?
        iii. What happens when the trainer becomes aware of information that may be detrimental to the participant?

II. Campus Recreation and Wellness Portion
    a. The Training Process
        i. How does a trainer find out about a client?
        ii. What information is given to the trainer?
        iii. What does the first session entail?
        iv. What does the second session entail?
        v. What if the client wants to continue with additional sessions?
        vi. How is the Assistant Director for Fitness and Wellness involved in the process?
    b. Let's Try out the Intervention
        i. Everyone complete a PHQ-9, reporting point in time feelings versus "in the past two weeks"
        ii. Trainers each train 3-4 counselors for 5-10 minutes
        iii. CAPS staff complete a second point in time PHQ-9
        iv. Discussion – How did it make you feel? What questions arose during the exercise portion?
    c. What happens once a student finishes personal training?

i. What questions should counselors ask of participants during and after training?

APPENDIX I: CAPS AND CRW SEPARATE TRAINING AGENDAS

Training for Personal Trainers
Tuesday, August 11th 11am-Noon
Lead By: Director, Counseling and Psychological Services

Items to Cover During Training:

I. Tour of CAPS space
II. What happens when a student seeks CAPS?
    a. How is a specific counselor determined?
    b. How does CAPS determine how often you see the client?
    c. What is the typical wait time for an appointment?
    d. What happens when a student is in an emergency situation?
    e. What happens if a student needs assistance after hours?
III. What are the confidentiality and governing policies of CAPS?
    a. How do those policies impact the work with CRW and the personal trainers?
V. What are some unique challenges regarding how to work with a depressed student?
    a. What are some anticipated barriers?
    b. How can we break down those barriers?
    c. How do the trainers know what and when to report to CAPS during the process?
VI. Where should training sessions occur?
    a. What if an individual is not comfortable in the CRC?
VII. Question and Answer Session with Trainers
    a. What anxieties or concerns do you have about working with depressed students?
    b. What anxieties or concerns do you have about the intervention process?
    c. What questions do you have about what is going to happen?

Training for CAPS Staff
Tuesday, August 11th 11:00am-Noon
Lead By: Mandy Dockendorf, Assistant Director for Fitness and Wellness

Items to Cover During Training:

I. Tour of the Campus Recreation Center
    a. Cover all spaces in the CRC
    b. Cover all programs under CRW
II. Question and Answer Session with Counselors

APPENDIX J: COUNSELING AND PSYCHOLOGICAL SERVICES RELEASE OF INFORMATION

AUTHORIZATION FOR DISCLOSURE OF PROTECTED HEALTH INFORMATION

Counseling & Psychological Services
2nd Floor Bird Bldg. Cullowhee, NC 28723
(828) 227-7469 Fax: (828) 227-7004

Name (Last, First) _____ WCU ID# (920) _____ Date of Birth _____

Address: _____ City/State/Zip: _____

Phone: ( ) _____

I hereby authorize: Western Carolina University Counseling & Psychological Services (CAPS)

❑ Disclose PHI to: ❑ Receive PHI from: (name of agency or individual/contact information):

Name/Organization: _____

Address: _____ City/State/Zip: _____

Phone: ( ) _____ Fax: ( ) _____

The protected information to be disclosed includes: (√) all that apply.

❑ Attendance/Contact Record ❑ Emergencies/Hospitalizations ❑ Substance/Alcohol Abuse _____ (client initials)
❑ Assessment ❑ Medication History/Lab Work ❑ HIV/AIDS infection _____ (client initials)
❑ Medical Screenings/Evaluations ❑ Treatment Summary

❑ Mental Health Records: (specify) _____ _____ (client initials)

❑ Other: (specify) _____

The specific purpose of the disclosure: (√) all that apply.

❑ Continuity of Care ❑ Coordinate Care ❑ Request by Client

❑ Other: (specify) _____

AUTHORIZATION FOR DISCLOSURE OF PHI FOR COORDINATION OF CARE / REFERRAL

- I understand that health care providers, plans, and insurers must follow the federal & state privacy standards, including the Federal Substance Abuse Confidentiality Regulations (CFR 42, part 2), and the Health Insurance Portability and Accountability Act of 1996 ("HIPPA"), 45 CFR, part 160 & 164. If an individual or organization receiving my protected health information (PHI) does not fall into one of these categories, my PHI may be re-disclosed without further authorization.
- I understand this authorization is voluntary and I may refuse to sign this authorization without affecting my health care.
- I understand this consent is subject to revocation at any time except to the extent that the program which is to make the disclosure has already taken action in reliance on it. If not previously revoked, this consent will terminate on: _____ or by ONE YEAR from the date signed.

I have had an opportunity to review and understand the content of this authorization form. By signing this authorization, I am confirming that it accurately reflects my wishes.

SIGNATURES:

_____ Date: _____ Time: _____
Signature of Client

_____ Date: _____ Time: _____
Signature of Legally Responsible Person if under 18 years of age

APPENDIX K: PERSONAL TRAINING INITIAL REFERRAL FORM

Personal Training Initial Consultation Form

Western Carolina University
Campus Recreation & Wellness

Client Name: _____ Student ID: _____ Date: _____

Phone Number: _____ E-mail: _____

What is your goal for engaging in personal training at this time?

_____
_____
_____
_____

How do you expect exercise to help you meet your mental health goals?

_____
_____
_____
_____

Please note what characteristics in a personal trainer are important to you? (e.g., gender, personality characteristics):

_____
_____
_____

APPENDIX L: INFORMED CONSENT FORM

Western Carolina University
Department of Campus Recreation & Wellness
Campus Recreation Center
Cullowhee, NC 28723
Phone: 828-227-7069
Fax: 828-227-7120

Principal Investigator (PI): Shauna Sleight
Phone: 828-227-8803
Project Title: Reaching and Retaining Students with Depression Through Exercise

Purpose of Research Intervention:
You are invited to participate in a research intervention for students at Western Carolina University who are currently seeking counseling services for depression. The purpose of the intervention is to evaluate the impact exercise has on depression symptoms, and the overall impact the combination of counseling and exercise has on the retention of a student facing depression.

Description of Participation:
Participants who choose to participate, after having the opportunity to ask any questions, will sign an informed consent with the principal investigator. Participants are then expected to (1) attend an initial consultation with the Principal Investigator and (2) fill out a Physical Activity Readiness Questionnaire, a Healthy History Form, a Personal Training Profile and Goals Worksheet, and a Patient Health Questionnaire 9. The initial consultation will last 45 minutes. Following the initial consultation and confirmed ability to participate in physical activity, participants will receive and complete two free personal training sessions with a nationally certified personal trainer. During training sessions, trainers will take field notes to document participant behaviors and feelings. After completion of the training sessions, the participant will complete a Post Training Evaluation and another Patient Health Questionnaire 9, as well as do a post consultation with the Principal Investigator. The principal investigator will then follow up with participant during the final two weeks of the Fall 2015 semester to do a final consultation meeting and final PHQ-9. Throughout the intervention, participants will still attend regular counseling sessions.

Benefits of Participation:
The main benefit of participation in this intervention is to take an active role in your personal healthcare. Additionally, participation may result in the development of a coping mechanism. Another benefit of participation is to receive high quality, free personal training by nationally certified personal trainers during the intervention.

Risks of Participation:
Participation in any physical activity can result in injury or other medical complications. If pre-existing medical concerns exist, participants are required to provide medical clearance from a doctor.

Confidentiality:
In an effort to maintain the highest level of confidentiality, I ask that you choose a pseudonym for yourself that I can use in my writings and presentations. Additionally, if you mention another individual's name during the intervention process, I will also change that person's name to a fictional name. Collected data and confidential information will be locked in a filing cabinet that is accessible only by me, the Principal Investigator.

Voluntary Participation:
Your participation is strictly voluntary. If you decide not to participate there will be no penalties or negative consequences. Your continued participation in counseling and psychological services will not be affected if you decide not to participate in this study. You may choose to withdraw from the intervention at any time. If you choose to withdraw, all data concerning you will be destroyed.

If you have questions about this intervention, contact me, Shauna Sleight, at the Department of Campus Recreation & Wellness, Western Carolina University, Cullowhee, NC 28723 (828-227-8803 or by email at sage@wcu.edu) before signing this form. If you have questions or concerns regarding your rights or your treatment as a participant in this study, you may also contact the chair of the Western Carolina University Institutional Review Board at 828-227-7212.

YOU ARE MAKING A DECISION WHETHER OR NOT TO ALLOW THE PRINCIPAL INVESTIGATOR TO USE THE WORDS FROM YOUR QUESTIONNAIRES, INTERVIEWS, SURVEYS AND EVALUATIONS FOR RESEARCH AND PRESENTATION PURPOSES ONLY. YOUR SIGNATURE BELOW ALSO INDICATES THAT YOU ARE OVER THE AGE OF 18.

I AGREE DO NOT AGREE (Circle one) to participate in this research intervention.

Participant's name (please print) _____ Date: _____

Participant's Signature: _____

APPENDIX M: PERSONAL TRAINING PROGRAM INFORMATION AND POLICY CONTRACT

Western Carolina University | Campus Recreation and Wellness

Personal Training Program Information and Policies

Welcome to the *WCU Campus Recreation & Wellness* Personal Training program! We are delighted that you chose us as a part of your commitment to health and fitness. Our certified personal trainers are ready to provide you with the necessary information and motivation to help you reach and maintain your personal fitness goals. The following information will provide you with important program policies. Before getting started, please read and sign this form as confirmation you understand this information.

PAYMENT

Participation in the CAPS referral program includes two free personal training sessions. Should you wish to continue personal training after the referral program concludes, payment for sessions must be made *in advance* of meeting with your trainer. At the time of payment, you will have the opportunity to request a particular trainer. If you do not request a specific trainer, a trainer will be assigned to you based on you goals and availability. Your trainer will contact you within three business days after we receive your registration.

EXPIRATION DATE

All WCU Personal Training sessions have a semester-end expiration date, meaning all sessions must be completed in the semester for which the client signed up for the sessions. After the expiration date, any remaining sessions will be invalid. If there are extenuating circumstances that prevent you from completing your sessions, please contact your trainer immediately so we can make accommodations. Documentation will be requested at the time of accommodation.

CANCELLATIONS

In order to cancel or reschedule an appointment, you must contact your trainer *at least 24 hours in advance* of the scheduled appointment. Similarly, if a trainer does not contact you at least 24 hours in advance to cancel or reschedule an appointment, you will receive a *complimentary* session.

TARDINESS

All clients and trainers are encouraged to be prompt. If a client arrives late, this time will be deducted from the session; contrarily, if a trainer arrives late, the amount of time will be *added* for an extended session. Please be advised that trainers are required to wait 15 minutes for a scheduled client, after which time the session is subject to cancellation.

REFUNDS AND CREDITS

WCU Campus Recreation & Wellness does not offer credits, so please be sure that our services will match your needs *before* committing. If you find that your needs change once you have begun this program, please let us know; we are eager to find a way to accommodate you within this program.

I have read and will comply with the above information.

_____

Name (please print)

_____ _____

Signature *Date*

APPENDIX N: HEALTH HISTORY FORM

Western Carolina University | Campus Recreation and Wellness

Health History Questionnaire

Name _____ Date _____

Gender _____ Age _____ E-mail _____

Height _____ Weight _____ Birthday_____

Telephone (W) _____ Telephone (C) _____

Regular physical activity is safe for most people. However, some individuals have health-related risks that might require them to check with their physician prior to starting an exercise program. To help determine if there is a need for you to see your physician before starting an exercise program, please read the following questions and answer carefully. All information is kept in the strictest confidentiality. Check YES or NO.

Yes	***No***	
Y	N	1. Do you have a heart condition?
Y	N	2. Have you ever experienced a stroke?
Y	N	3. Do you have epilepsy?
Y	N	4. Are you pregnant?
Y	N	5. Do you have diabetes?
Y	N	6. Do you have emphysema?
Y	N	7. Do you feel pain in your chest when you engage in physical activity?
Y	N	8. Do you have chronic bronchitis?
Y	N	9. Are you currently being treated for a bone or joint problem that restricts you from engaging in physical activity?
Y	N	10. Has a physician ever told you or are you aware you have high blood pressure?
Y	N	11. Has anyone in your immediate family (parents/brothers/sisters) had a heart attack, stroke, or cardiovascular disease before age 55?
Y	N	12. Has a physician ever told you or are you aware you have a high cholesterol level?
Y	N	13. Do you currently smoke?
Y	N	14. Are you currently exercising LESS than 1 hour per week? If you answered no, please list your activities. _____
Y	N	15. Are you currently taking any medication? If yes, please list the medication and its purpose. _____
Y	N	16. Do you have asthma or another respiratory condition that causes difficulty with breathing? If yes, please describe. _____
Y	N	17. Do you have any orthopedic conditions that would restrict you in performing physical activity? If yes, please describe. _____
Y	N	18. Have you experienced within the past 6 months back pain or discomfort that Prevented you from carrying out normal daily activities?
Y	N	19. Do you have any other injuries that would affect your exercise routine? If yes, please describe. _____

I read, understood, and completed this questionnaire. Any questions I had were answered to my full satisfaction.

_____

Name (please print)

_____ _____

Signature *Date*

APPENDIX O: PHYSICAL ACTIVITY READINESS QUESTIONNAIRE

Physical Activity Readiness Questionnaire - PAR-Q (revised 2002)

PAR-Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO		
☐	☐	1.	**Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?**
☐	☐	2.	**Do you feel pain in your chest when you do physical activity?**
☐	☐	3.	**In the past month, have you had chest pain when you were not doing physical activity?**
☐	☐	4.	**Do you lose your balance because of dizziness or do you ever lose consciousness?**
☐	☐	5.	**Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?**
☐	☐	6.	**Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?**
☐	☐	7.	**Do you know of any other reason why you should not do physical activity?**

If you answered

YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want — as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active – begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal – this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. It is also highly recommended that you have your blood pressure evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

DELAY BECOMING MUCH MORE ACTIVE:

- if you are not feeling well because of a temporary illness such as a cold or a fever – wait until you feel better; or
- if you are or may be pregnant – talk to your doctor before you start becoming more active.

PLEASE NOTE: If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Informed Use of the PAR-Q: The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.

NOTE: If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

"I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction."

NAME _____

SIGNATURE _____ DATE _____

SIGNATURE OF PARENT or GUARDIAN (for participants under the age of majority) _____ WITNESS _____

Note: This physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if your condition changes so that you would answer YES to any of the seven questions.

CSEP | SCPE

APPENDIX P: PHYSICAL ACTIVITY PROFILE AND GOALS

Western Carolina University | Campus Recreation and Wellness

Physical Activity Profile and Goals

1. Do you consider yourself:
   - ____ Sedentary (little or no regular workouts)
   - ____ Lightly active (sporadic workouts)
   - ____ Moderately active (2-3 days/week for 15- 30 min.)
   - ____ Highly active (3-5 days/week for 30-45 + min.)

2. Are you currently involved in a regular exercise program? Yes or No

3. If you are exercising on a regular basis, of what do your workouts consist?

_____

_____

4. What are your specific fitness goals? (Please circle all that apply)

Increase strength & endurance	Sports conditioning
Improve cardiovascular fitness	Improve muscle mass
Lose weight/body fat	Improve muscle tone
Exercise regularly	Injury rehabilitation
Improve balance/coordination	Improve flexibility
Other(s):_____	

5. What are your specific health goals? (Please circle all that apply)

Reduce stress	Control blood pressure
Stop smoking	Improve productivity
Increase energy/feel better	Improve nutritional habits
Achieve balance in life	Reduce back pain
Increase health awareness	Reduce disease risk
Other(s):_____	

6. How do you feel about exercise in general? (Please circle all that apply)

Fun	Tolerate it	Boring	Stress relieving
Relaxing	Motivating	Challenging	Hate it
Difficult	Love it	Other(s): _____	

7. What may be an obstacle(s) for you in pursuing a regular exercise program?

8. What do you hope to achieve through your personal training experience?

I read, understood, and completed this questionnaire. Any questions I had were answered to my full satisfaction.

_____
Name (please print)

_____ _____
Signature *Date*

APPENDIX Q: PATIENT HEALTH QUESTIONNAIRE 9 (PHQ-9)

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING __0__ + _____ + _____ + _____

=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	**Somewhat difficult**	**Very difficult**	**Extremely difficult**
☐	☐	☐	☐

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

APPENDIX R: POST TRAINING EVALUATION

Western Carolina University | Campus Recreation and Wellness

1. How effective were your training sessions in helping you to meet your goals?

5	4	3	2	1
very effective	**mostly effective**	**somewhat effective**	**not very effective**	**completely ineffective**

Please use this space to explain your rating: _____

_____

2. How effective were/are your counseling sessions in helping you to meet your goals?

5	4	3	2	1
very effective	**mostly effective**	**somewhat effective**	**not very effective**	**completely ineffective**

Please use this space to explain your rating: _____

_____

3. Please rate the efficiency of the referral process to get the personal training started.

5	4	3	2	1
very efficient	**mostly efficient**	**somewhat efficient**	**not very efficient**	**completely inefficient**

Please use this space to explain your rating: _____

_____

4. How helpful was the information you received from your trainer?

5	4	3	2	1
very helpful	**mostly helpful**	**somewhat helpful**	**not very helpful**	**completely unhelpful**

Please use this space to explain your rating: _____

_____

5. How likely will you be to exercise regularly to help you treat your mental health concerns?

5	4	3	2	1
very likely	**likely**	**somewhat likely**	**not very likely**	**completely unlikely**

Please use this space to explain your rating: _____

_____

APPENDIX S: POST INTERVENTION SURVEY FOR CAPS STAFF

Default Question Block

This survey is intended to provide feedback on the collaboration between Counseling and Psychological Services and Campus Recreation and Wellness specifically regarding the "Exercise for Depression" Study. Feedback regarding the collaboration is essential to the improvement process and is one step in the evaluation process. This survey is estimated to take 5-10 minutes.

Did you refer anyone from CAPS to CRW for participation in the "exercise for depression" study?

- Yes
- No

If so, did you follow up with any of the clients about their experience?

- Yes
- No

Please share any follow up comments you feel are beneficial to the evaluation of this study and the partnership between CAPS and CRW.

Please rate your level of satisfaction with the following items:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Training received on August 11, 2015 regarding the "Exercise for Depression" study					
Ease of the referral process from CAPS to CRW					
Timeliness of the referral process from CAPS to CRW					
Forms associated with the referral process from CAPS to CRW					

In your opinion, what can be done to improve upon the referral process?

In your opinion, should exercise continue to be offered as a supplemental treatment option for clients exhibiting depressive symptoms?

- Yes
- No

Why should exercise continue to be offered as a supplemental treatment option for clients exhibiting depressive symptoms?

How might the overall partnership between CAPS and CRW be improved or built upon for the future?

APPENDIX T: POSTER PRESENTATION

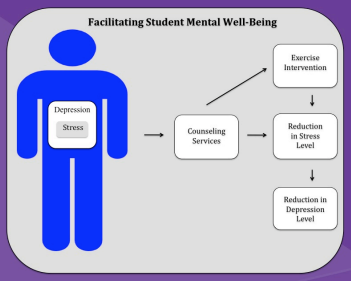
Addressing Depression in Western Carolina University Students: The Role of Exercise

Institutional Context: Western Carolina University (WCU) has just over 10,000 students and is located in a rural town in Western North Carolina near the Great Smoky Mountains

Situational Context: According to 2010 (American College Health Association) WCU National College Health Assessment (NCHA) data, 25% of students mentioned experiencing depression in the last twelve months with over 10% stating it affected his/her academic performance. In 2013, WCU issued the second version of the NCHA and results indicated 35% of WCU students felt so depressed at some point in the past twelve months that it was difficult to function (American College Health Assessment, 2013). Of students who entered Counseling and Psychological Services (CAPS) at WCU during the 2012-2013 academic year, 35% noted seriously considering suicide at least one time (Gorman, 2014).

Improvement Project: The purpose of this improvement effort was to implement an exercise intervention for traditionally-aged undergraduate students with mild to moderate depression to reduce stress levels, ultimately resulting in a reduction of depressive symptoms. The improvement effort sought to answer three questions:

1. What are the barriers facing students with depression from pursuing a regular exercise program?
2. Does an exercise intervention decrease the prevalence of depressive symptoms in students with depression?
3. Does an exercise intervention assist in the development of regular exercise habits for students with depression?



Improvement Design: Campus Recreation and Wellness (CRW) at WCU partnered with CAPS to build a referral partnership in an effort to help students build a lifelong coping mechanism for depression. CAPS counselors could refer interested clients to CRW to receive an initial consultation with a professional, a free fitness assessment, two free personal training sessions, and a post-consultation. Students were asked to fill out a Patient Health Questionnaire-9 (PHQ-9), a non clinical depression screening tool developed by Pfizer, pre and post exercise intervention, and swipes into the Campus Recreation Center (CRC) were tracked pre and post exercise intervention. Additionally, CAPS tracked CCAPS assessment data, which includes assessment of 8 mental health subscales, prior to each counseling appointment.

Participants: 13 graduate and undergraduate students, 18-25 years old, who were clinically diagnosed as having mild to moderate depression. All participants were interested and consented to participating in the study. Two participants completed the initial consultation but never completed any other sessions, and three participants never completed all sessions. The other 8 participants fully completed all sessions.

Results: Although CCAPS data did not fully support a change in depression levels from the initial contact by CAPS to the end of the semester, pre and post PHQ-9 data supported participant improvement in depressive symptoms but not in functional impairment. Participants' self-reported survey data supported personal training as a mechanism to help participants reach health and fitness goals. Overall the results of the data analysis support exercise as an intervention for depression, and assessment of the program supports the continuation of such a program at WCU.

Results of Paired Samples T-Test for PHQ-9 Pre and Post-Intervention Scores

Variables	t	p (2-tailed)
PHQ1Total versus PHQ2 Total	5.272	.001*
PHQ1-FI versus PHQ2-FI	1.000	.351

Note: PHQ1 stands for the pre-exercise intervention PHQ-9 completed by participants in the initial consultation. PHQ2 stands for the post-exercise intervention PHQ-9 completed by participants in the post consultation. FI = functional impairment, as recorded by individual participants.
* indicates statistical significance at the p < 0.20 level, which was selected for use since the study is done in a clinical setting.

Poster Prepared By:
Shauna Sleight, Western Carolina University

Western Carolina University

APPENDIX U: POLICY BRIEF

Managing Student Mental Well-Being at WCU

By: Shauna Sleight

Executive Summary

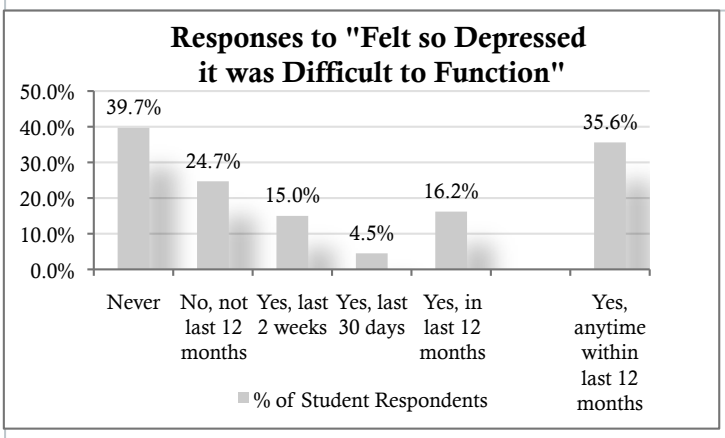
This policy brief addresses the need to improve the coping skills of college students with mental health concerns to improve the safety of college campuses and to improve student academic success. The brief specifically focuses on Western Carolina University and ways to approach building lifelong coping skills versus acute solutions to the problem. Currently Western Carolina University (WCU) uses an issue alert system to identify students in distress and assists students academically as they meet the requirements set forth in the Americans with Disabilities Act. However, a more intentional multi-disciplinary care model is recommended to address student needs socially, academically, financially, and behaviorally, in addition to expanding proactive means to identifying a student who may be in distress.

Statement of the Problem

How can Western Carolina University (WCU) improve mental well-being in college students on campus to assist in student academic success?

Background of the Problem

The mental health of college students is a growing concern across the United States. Safety concerns on college campuses continue to increase with recent acts of violence, and it is known that mental illness is a risk factor for gun violence including suicide (Hall & Friedman, 2013). Additionally, students with psychiatric disorders, which include a number of behavioral or psychological problems, have a lower persistence to degree completion when compared to their peers (Koch, Mamiseishvili & Higgins, 2014). One of the most common psychiatric disorders is depression. In 2009-2012 in the United States, 7.4% of all 18-39 years olds had moderate to severe depressive symptoms in the past two weeks (Pratt and Brody, 2014). Although that statistic may be alarming, WCU has an even greater number of students reporting depression in more recent years. According to 2010 (American College Health Association) WCU National College Health Assessment (NCHA) data, 25% of students mentioned experiencing depression in the last twelve months with over 10% stating it affected his/her academic performance. In 2013, WCU issued the second version of the NCHA and results indicated 35% of WCU students felt so depressed at some point in the past twelve months that it was difficult to function, a statistic which is shown in the chart below (American College Health Assessment, 2013).



Developed from the American College Health Association, Institutional Data Report for Western Carolina University, Fall 2013.

There are varying levels of depression, with the most severe being tied to life-threatening behaviors, meaning suicidal behaviors. In the United States suicide is the second leading cause of death for 15-24 year olds (Centers for Disease Control and Prevention, 2013), which is the age range of the majority of Western Carolina University students.

2012-2013 Comparison Data

Seriously Considered Attempting Suicide	WCU	Nationally
Never	62.2%	70%
1 time	14.1%	11.5%
2-3 times	1.3%	10.6%
4-5 times	3.4%	2.1%
More than 5 times	8.2%	5.8%

Developed from Comparison Data for CAPS and CCMH 2012-2013 by Gorman, K. (2014), unpublished data, Counseling and Psychological Services Department, Western Carolina University, Cullowhee, North Carolina, United States.

Alarmingly, 15% of WCU students seriously considered attempting suicide in the last 12 months (American College Health Association) according to fall 2013 data, an increase of 7% from WCU's 2010 data. Of students who entered Counseling and Psychological Services (CAPS) at WCU, 35% noted seriously considering suicide at least one time during the 2012-2013 academic year (Gorman, 2014). Even more alarming is that 17.5% of those WCU students reported considering causing serious physical injury to another person (Gorman, 2014). Depression is found to be linked to suicide through an individual performing delinquent acts, which are risky behaviors (Bauer, Chesin & Jeglic, 2014). The National Center for Chronic Disease Prevention and Health Promotion (CDC, 2011) notes six types of health risk behaviors that contribute to leading causes of death including tobacco use, unhealthy eating, inadequate physical activity, alcohol and other drug use, risky sexual behaviors, and behaviors that contribute to unintentionally injury or violence. These may be areas to consider addressing when looking to improve mental well-being.

Current Efforts at WCU

At Western Carolina University, Counseling and Psychological Services (CAPS) continues to be the main resource for students with mental illness. CAPS works with Health Services to provide psychiatric evaluations and medications for students with mental illnesses and for those dealing with depression. However, counseling is one of the only structured approaches to improving mental well-being. Since limited coping abilities has a significant impact on college student psychological distress (Byrd & McKinney, 2012), it is important that WCU continue to seek other ways of improving mental well-being in college students on campus through lifelong coping strategies.

In Fall 2015, CAPS and Campus Recreation and Wellness (CRW) partnered to offer an improvement effort focused on providing an exercise intervention for students with depression. The exercise intervention involved a direct referral from counseling to CRW, an initial consultation by CRW with the student, a free fitness assessment and two free personal training sessions by a CRW certified personal trainer, and a post exercise consultation by CRW. Three tools were used to assess the improvement effort: Counseling Center Assessment of Psychological Symptoms (CCAPS) depression subscale results from three different points in the semester, PHQ-9 (a non clinical depression screening tool) results pre and post exercise intervention, and participant self-report perceptional data on the post-training evaluation. Eight students, age 18-25 years old, with a clinical diagnosis of mild to moderate depression participated in the improvement effort. Results are as follows.

There was a significant difference between CCAPS initial depression percentile scores (M= 70.6, S.D.= 24.399) and CCAPS date of referral depression percentile scores (M=57.4, S.D.=30.754); $t(4) = 4.009$, $p = .016$, two-tailed. This analysis suggests there is some impact on depressive symptoms between a participant's initial counseling session and a counseling session later in the semester when the student is actually referred for the exercise intervention. There was also a significant difference between CCAPS initial depression percentile scores (M=72.14, S.D.=20.227) and CCAPS end of semester percentile scores (M=82.57, S.D.=15.725); $t(6) = -2.273$, $p = .063$, two-tailed. Unfortunately, this analysis suggests there is a negative impact on depressive symptoms between the initial counseling session and a counseling session close to the end of the semester.

Results from the PHQ-9 data analysis indicate a significant difference in total PHQ-9 pre exercise intervention scores (M=14.88, S.D.=6.875) and the total PHQ-9 post exercise intervention scores (M=8.50, S.D.=4.957); $t(7) = 5.272$, $p = .001$, two-tailed. This analysis suggests the exercise intervention impacts non-clinical depression screening scores. Finally, results indicate no significant difference in pre exercise intervention functional impairment levels (M=2.25, S.D.=.886) and post exercise intervention functional impairment levels (M=2.00, S.D.=0.926); $t(7) = 1.000$, $p = .351$, two-tailed, which suggests despite improvements in self-reported non-clinical depression screening scores, that there is no significant difference in self-reported functional impairment scores pre and post exercise intervention.

On the post-training evaluation participants were asked to self-report, "How effective were your training sessions in helping you meet your goals?" A 5-point likert scale was used, with 5 being "very effective" and 1 being "completely ineffective". The mean score reported by the 8 participants was M=4.375, a score between "mostly effective" and "very effective".

These descriptive statistics suggest participants felt personal training was effective in helping individuals reach their specific fitness and health goals, despite individuals having some varying goals. Participants' qualitative responses explaining their self-reported score confirms the above suggestion, with qualitative statements as follows: "I was given the tools to meet my goals, as well as encouragement to meet my goals", "time is still an issue by I learned a lot and got answers to my questions", and "very helpful with getting me acquainted with the gym." Three participants indicated still needing more in various ways, including "still not comfortable doing it alone", "still nervous working out around others", and "as it was only two sessions I didn't get that in-depth".

Despite the progress in providing a more comprehensive approach to mental well-being, efforts still need to be made to get students to help early if they are struggling with mental health concerns.

Pre-Existing Policies

There is one main policy and one main practice that are currently in place at WCU to aid students who are facing depression or other psychiatric disorders. One is a federal policy and the other is a University wide reporting structure.

American Disabilities Act
The federal American Disabilities Act (ADA) identifies psychiatric disorders as subject to ADA compliance if the disorder substantially impacts one or more major life activities. This is in place to help counteract some of the difficulties students with psychiatric disorders can face while at school, such as medication side effects, social isolation, anxiety, distractions, panic attacks, and more.

Student Concern Response Team (SCRT)
The WCU SCRT is in place to respond to concerns brought forth by faculty, staff, or other students, who identify students at WCU who are experiencing behavioral difficulties that appear to be impacting their academics, social life, or other functional capabilities. SCRT helps provide interventions to assist students in making positive choices that will impact their success as a student.

Policy and Practice Options

There are three potential policy options for WCU. Two of the three options deal with identifying students with mental illness to treat the condition early. The third option identifies a more comprehensive way to provide students with coping skills, building on the recent intervention between CAPS and CRW.

Optional Early Mental Health Screening
Under and optional early mental health screening policy, students have the option of taking a mental health assessment upon arrival to WCU. The screening results would then be used as a self awareness tool for students and to inform students of resources available to them during their time at WCU. Resources available would be specific to individual students' results. The main benefit of optional early mental health screening is bringing self-awareness to students regarding their mental health. One concern regarding this policy option is the invasion of student privacy. It is important for WCU to consider the details of implementation, such as whether anyone on campus has access to the results or if they are only to inform the student.

Faculty/Staff Training on Identification of Behavioral Difficulties
The second policy recommendation is to provide optional faculty and staff training on identification of behavioral difficulties to assist faculty and staff in utilizing the Student Concern reporting mechanism. This training could be an optional, one time, online training to assist in teaching faculty and staff what behaviors to look for to identify a student in distress. The main benefits are the training is available at the convenience of each faculty and staff member and is a low cost option. Additionally, the training can be promoted during mandatory campus safety training for faculty and staff so every faculty and staff member is made aware of the optional training. The main disadvantage is the interpretation of the information that is presented in an online context.

Multi-Disciplinary Care Model Options
Developing a care model to approach students with depression or other mental health concerns means building a multi-disciplinary approach to treatment options. Developing a multi-disciplinary approach would include teaching lifelong coping strategies to students. The main benefit is students receive treatment that is long-term versus acute and that can possibly treat depressive symptoms without medication. The main disadvantage is students have to agree to being treated by this approach given the Health Information and Portability and Accountability Act guidelines regarding confidentiality of health information. One option includes expanding the recent exercise intervention to include anyone with mental health concerns that may benefit from exercise, while also expanding the program to include an option for group therapy in both a counseling and exercise setting. There are also several other educational options for developing this model.

Recommendations

It is recommended WCU start by implementing two of the approaches above to manage student mental well-being. First, WCU should add an optional training for faculty and staff on identification of behavioral difficulties to improve reporting via the student concern reporting mechanism. Although this does not address the treatment of mental health concerns, identification is the first step in getting students the help they need. Second, WCU should implement a multi-disciplinary care model to approach the treatment of students with mental health concerns focused within the Division of Student Affairs Health and Wellness unit. Teaching students lifelong coping strategies will increase retention and benefit students long-term financially, socially, and behaviorally. Multi-disciplinary care strategies need to include the use of psychiatric evaluations, counseling, physical fitness, medication management, nutrition, and educational workshops and awareness campaigns.

Sources Consulted

American College Health Association (ACHA)
The ACHA provides research and education to members and links college health professionals to enhance the health and wellbeing of students on college campuses.

Center for Collegiate Mental Health (CCMH)
CCMH is a research center focused on providing data and up-to-date information about college student mental health, which serves administrators, researchers, and practitioners.

Centers for Disease Control and Prevention (CDC)
The CDC works to increasingly protect American from harm caused by breeches in safety, security, and health threats. Part of the CDC's efforts includes extensive research and data collection to better inform American society.

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APPENDIX V: EXERCISE FOR OVERALL HEALTH BROCHURE

Exercise for Overall Health

Campus Recreation & Wellness (CRW) is partnering with Health Services (HS) to help you better understand and experience how exercise can impact your overall health. HS patients have the opportunity to receive a free fitness consultation and equipment orientation by a CRW nationally certified student personal trainer. CRW wants students to recognize how exercise can impact their overall health and help students build healthy lifestyle habits.

Who is Eligible?

Any current Western Carolina University student utilizing Health Services is eligible to participate. The service is intended to reach those who are not currently engaged in a regular exercise program, and is designed for students to learn about the benefits of exercise and how to utilize the available equipment. Please speak with your HS provider about preventative healthcare and contact CRW if you are interested in making exercise a part of your lifestyle.

What are the overall benefits of exercise?

There are several benefits of exercise. The most noted benefits are as follows.

- Increases longevity
- Aids in social interactions
- Improves mood and fights depression
- Reduces stress
- Aids in overall mental well-being
- Reduces immune system chemicals
- Increases body temperature
- Aids in confidence gains
- Strengthens bones and increases flexibility
- Improves daily functions
- Aids in better sleep
- Aids in weight management
- Improves self image
- Reduces aches and pains
- Reduces the risk of injury
- Reduces the risk of cardiovascular disease
- Reduces the risk of other chronic diseases

What are the benefits of engaging with Campus Recreation & Wellness?

The main benefit of engagement with CRW is for you to take an active role in your personal healthcare. Additionally, participation may result in the development of a lifelong proactive approach to managing your overall well-being. Finally, participants receive a free exercise consultation and equipment orientation by a nationally certified personal trainer. CRW wants to introduce you to exercise and provide you with basic knowledge to make you successful in pursuing a personal exercise program.

What are the risks of engaging with Campus Recreation & Wellness?

There are minimal risks associated with the consultation and equipment orientation. There is a small risk that you may develop injuries or illness from participation in the equipment orientation, since CRW has participants actually utilize the equipment during that portion of the session. However, CRW minimizes risks by ensuring participants are in a highly monitored exercise environment with a certified personal trainer present.

What if I am uncomfortable working out in the Campus Recreation Center?

CRW wants you to feel comfortable and will do everything to ensure you have a positive experience. We understand the Campus Recreation Center is not an environment everyone feels comfortable in and welcome doing a consultation on body-weight exercise in a neutral, on-campus location that is external to the Campus Recreation Center. Please notify CRW if this is of interest to you during your initial contact with your trainer.

What if I do not have experience working out?

No experience is required. This is designed to be an introductory program, so your trainer will ensure the experience caters to those with no prior exercise knowledge or experience. However, we do want to ensure you are in good health to participate. It is up to the individual to consult with their HS provider or external healthcare provider to ensure they are cleared to exercise prior to engaging with CRW.

How do I get started?

If you are interested in participating or have further questions, please contact CRW directly. You may call our Assistant Director for Fitness and Wellness at 828-227-8801 or email her at aldockendorf@wcu.edu. For other general questions about CRW programs and services, please call the main line at 828-227-7069 or stop by the front desk of the Campus Recreation Center.